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ISSUED TWICE MONTHLY BY THE CIVIL AERONAUTICS AUTHORITY

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Airport Board Approves List of 200 Projects

Construction or improvement projects on 200 airports in the United States and its possessions, approved by a priority board consisting of the Secretaries of War, Navy, and Commerce as necessary to the national defense, have been announced by Col. Donald H. Connolly, Administrator of Civil Aeronautics.

The program was authorized in a $40,000,000 appropriation passed by Congress in October. The appropriation was made "for the construction, improvement, and repair of not to exceed 250 public airports * * * determined by the Administrator, with the approval of a Board composed of the Secretary of War, Secretary of the Navy, and Secretary of Commerce, to be necessary for national defense."

Colonel Connolly pointed out that the program, as approved by the cabinet board, has been designed to provide the maximum number of completed and usable units of improvement possible, rather than the completion to their ultimate classification of only a few airports.

"I want to make it clear, however," he added, "that this does not mean we will merely start a great many developments. Actually, we have 23 percent fewer projects than the limitation placed by law. And every project we have listed is so planned that it will be a complete improvement unit, available for landing use without additional expenditure upon it.

"Improvements are being undertaken only where the land is owned by a political subdivision of Government which is prepared to make it available to the Federal Government without cost, and further, to pledge itself to maintain and operate the improved airport.

See AIRPORTS APPROVED (*page 9*)

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1940 IN REVIEW

Civil Aviation Makes Rapid Strides in Year Just Ended; C. P. T. P. Expands; New Airlines Launched; Plane Production Soars

The year 1940 brought numerous and far-reaching advances to American civil aviation

Spurred by the Civilian Pilot Training Program, carried on under the direction of the Administrator of Civil Aeronautics, the number of active airplane pilots rose to record levels. By the end of the year there were an estimated 65,000 active pilots in the Nation, an increase of more than 100 percent over the 31,264 pilots on January 1, 1940. The number of certificated aircraft at the end of the year was estimated at 17,000, a gain of more than 30 percent over the 12,829 such aircraft at the beginning of the year.

This, coupled with rapid expansion of air carrier operations, resulted in sharp increases in domestic civil aircraft production.

During the year the air transportation industry launched scheduled air routes on new international frontiers, began operation over new domestic routes, and scheduled additional service over existing domestic routes.

The year saw the enactment of legislation embodying the first clear Federal statement of policy regarding the construction and improvement of airports in connection with national defense requirements.

In the late fall, the airport unit of the C. A. A. was raised from the status of a section to an enlarged division with broader powers to work in conjunction with the special board comprised of the Secretaries of War, Navy, and Commerce in administering the new airport program.

The new construction and improvement program of the Federal Airways System went forward during the year,

See 1940 IN REVIEW (*page 2*)

The Board

Through reorganization of the Civil Aeronautics Authority, which took place on June 30, 1940, activities of an administrative nature were transferred to the Administrator of Civil Aeronautics. The Administrator functions under, and is responsible to, the Secretary of Commerce, but the five-member Civil Aeronautics Authority, whose name was changed to "Civil Aeronautics Board," appoints its personnel and performs its work independently of the Department of Commerce. The Civil Aeronautics Authority, which technically embraces both the Board and the Administrator, no longer is an operating entity. The Air Safety Board was abolished and its duties were transferred to the Civil Aeronautics Board.

As a result of the reorganization, the Board's present activities may be divided into three main categories:

1. Economic regulation, including issuance of certificates of public convenience and necessity; fixing of air-mail rates; regulating of passenger and property rates; passing upon mergers and consolidations; and performing various other related economic regulatory duties;
2. The making of safety rules and the suspension and revocation of various certificates (including pilot's certificates) after notice and hearing; and
3. The investigation and reporting of aircraft accidents, a function formerly purformed by the Air Safety Board.

The Administration

The Administration's activities embrace the following:

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1940 IN REVIEW

(*Continued from page 1*)

adding additional aerial highways to the network already established.

Following is a résumé of the various outstanding developments along the civil aviation front during the year just ended:

Civilian Pilot Training Program

The Civilian Pilot Training Program, largest mass-flight training program ever undertaken in the United States, in 1940 resulted in 25,168 youths receiving their private pilots' certificates, and at the end of the year another "batch" of nearly 15,000 trainees was nearing completion of the preliminary flight course.

Initiated on an experimental basis, with 330 students in 13 colleges, the C. P. T. P. expanded under the Civilian Pilot Training Act of 1939 to the point where some 10,000 students were trained between July 1, 1939, and June 30, 1940 in more than 500 college and noncollege centers throughout the entire country. Of this total, 8,327 trainees in the preliminary college program completed instruction in the spring of 1940.

Shortly thereafter Congress authorized funds for the training of about 45,000 youths in the year beginning July 1, 1940. That same month the first part of the program began. The preliminary college training took place at 495 centers, with 15,413 enrollees, of which there were 13,288 completions in the fall of the year. Participating in this phase of the program were 460 instructors, 530 flight operators, 1,972 aircraft, and 435 airports.

In the secondary college phase of the summer session, there were 91 training centers participating with 1,170 trainees; and there were 910 completions. This phase utilized 181 instructors, 93 flight operators, 173 aircraft, and 98 airports.

The noncollege summer session was conducted at 197 training centers, with 1,963 enrollees. A total of 270 instructors and 194 flight operators participated. Four hundred and thirty-nine aircraft and 185 airports were employed.

The fall session of the 1940–41 program currently is in progress, training being given for the private (formerly preliminary, course at 703 colleges with a total quota of 15,480 students. A total of 1,357 instructors, 675 flight operators, 2,416 aircraft, and 586 airports are participating. The fall session restricted commercial (formerly secondary) course is being given at 205 colleges, with a quota of 3,100 trainees. The noncollege phase is being given at 202 centers, but statistics on the total number of enrollees are not yet available. These trainees are scheduled to complete their instruction by January 30, 1941.

In addition, the C. P. T. P. has a continuous program for the training of apprentice instructors, and offers primary instructor, advanced instructor, and commercial refresher courses. During 1940 the program gave apprentice instructor training at 72 centers to 720 enrollees; advanced instructor training at 132 centers to 3,223 trainees; and commercial refresher courses at 73 centers to 1,280 pilots. No figures are available on completions for these courses.

In addition to providing a vast reservoir of civilian pilots, the C. P. T. Program already has fed more than 2,600 of its trainees to Army and Navy air training centers.

These figures include only those students who late in 1940 were in military training or definitely had been accepted and were awaiting orders to report. Flight centers reported an additional 677 who had applied for military aviation but had not yet been accepted.

Flight instructors from C. P. T. P. training schools also are providing an important reservoir of highly trained manpower. A total of 518 of them already have left the program to serve the armed forces or the air lines. Of these, 254 have been accepted by Army primary schools, 163 by the air lines, 63 by Canadian aviation, and 38 have returned to active military duty.

Aircraft Production

Although complete statistics on domestic civil aircraft production for the full year 1940 are not yet available, preliminary estimates show substantial gains in several classifications over the comparable 1939 output.

For instance, total production in the first 9 months of 1940 of 4,543 units had already exceeded the output of 3,715 planes in the full year of 1939 by 22.29 percent. Reports received thus far indicate that 1940 civil domestic production will total more than 6,750 aircraft.

The production estimates for 1940 show a marked trend in the light-plane category toward output of heavier aircraft with more powerful engines. This is attested to by the fact that during the first 9 months of the year, output of aircraft with engines of 50 horsepower and under showed a sharp decrease from the comparable 1939 production, while at the same time production of aircraft having engines of 51–70 horsepower showed an increase even greater than the decrease in output of the lesser-powered planes. Production of this type during the first three quarters of 1940 reached 3,031 units, by far the largest single classification.

The 1940 statistics available also show large increases in production of multiengine, heavy airplanes of the type used by the commercial air line, and also in the three- to five-place single-engine category.

Air Transportation

Increased emphasis on air travel during 1940 brought numerous new routes and extensions to existing domestic routes and new foreign and territorial routes. At the end of the year, American-operated airlines criss-crossed the continental United States; extended northward into Canada and Alaska; southward through

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the Caribbean and throughout Latin America; westward to Hawaii, the Orient, and Australasia; and eastward to Europe.

Probably the most striking developments during the year in the air transportation field were the establishment of an air route connecting the United States with Alaska — between Seattle and Juneau—and the inauguration of scheduled operations to New Zealand—between San Francisco and Auckland.

On the domestic side, approval was given for a number of new routes and extensions, the more important of which are described briefly herein: Service was authorized between St. Louis, Mo., and Nashville, Tenn., via Evansville, Ind. This route brought air-line service to Evansville as well as linking the two termini with direct service. A new route also was established between Minneapolis-St. Paul and Duluth, Minn. In addition, routes were authorized between Norfolk, Va., and Knoxville, Tenn., providing a line through the central part of North Carolina and connecting at Knoxville with existing routes to the West; between Minneapolis-St. Paul and Kansas City and St. Louis via Des Moines; between Amarillo and Oklahoma City; and between Houston and Memphis via Shreveport. The Board also provided for an extension of the line operated between St. Louis and Evansville to Louisville.

At the end of 1940 the scheduled carriers were operating an estimated 92,660 miles along domestic and foreign and territorial routes, which compares with 80,100 miles at the end of 1939.

The domestic carriers flew an estimated 108,254,000 revenue miles during 1940, an increase of about 31 percent over the 82,571,523 miles flown in 1939; revenue passenger miles reached 1,054,393,000, up 55 percent over the 1939 total of 677,672,955; while express-pound miles were 6,826,150,000, a gain of 25 percent over the 5,411,227,041 for 1939.

An important development in the air-mail field during 1940 was the approval of pick-up and delivery service, which is being carried on over five routes in the States of New York, Pennsylvania, New Jersey, Delaware, and West Virginia. Through the operation of this service, small cities which do not have airports sufficiently large to accommodate airliners, or other facilities for huge passenger-carrying aircraft, are afforded the advantages of air-mail service.

Airport Construction

By far the most important development in the airport picture in 1940 was congressional enactment of a measure appropriating $40,000,000 for construction and improvement of airports. Originally, $80,000,000 was requested, which would have put into action the first phase of the long-range airport plan on which the C. A. A. has been working for some time. As finally approved, the bill limits construction to 250 sites which are of national defense importance.

The long-range plan shows in detail the work required to give the United States a network of approximately 4,000 airports keyed to tomorrow's needs and includes developments in Alaska, Hawaii, and the South Pacific Islands. It originally was suggested to cover 6 years, at a total cost of $560,000,000, exclusive of the cost of any land or buildings.

The new law sets up an airport advisory board, composed of the Secretaries of War, Navy, and Commerce, to act on airport projects, and is of prime importance in that it constitutes the first clear Federal statement of policy toward airport construction.

On December 12, 1940, approval of construction or improvement projects on 200 airports was announced under this program. The full list of airports approved will be found on page 9 of this issue of the CIVIL AERONAUTICS JOURNAL.

Meanwhile, however, the usual program of airport construction which had been made possible by allotments from the Work Projects Administration and other Federal agencies, as well as contributions from local sponsors, continued during 1940. As directed by the Civil Aeronautics Act, each such airport project, before approval by the relief authorities, was first certified by the Administrator, following study, recommendations, and approval from an aeronautical standpoint by the Airport Section, as reasonably necessary in air commerce or for the national defense.

During the year, the Administrator issued some 275 such certificates. These projects involved an expenditure of over $40,000,000 in Federal funds, and sponsors' contributions of about $14,000,000, making a total outlay for this type of airport project of nearly $55,000,000.

At the end of 1940 it was estimated that there were 2,339 airports in the United States, which compares with 2,280 a year before. A break-down of this estimate shows the following classification by types: 709 municipal airports, 492 commercial airports, 284 C. A. A. intermediate fields, 69 Army airdromes, 22 naval air stations, 633 marked auxiliary fields, and 130 private fields.

Washington National Airport

The $12,500,000 Washington National Airport at Gravelly Point, just across the Potomac River from the Nation's Capital, was nearing completion at the end of 1940, and is scheduled to be open for air-line operation on a full-time basis in the spring of 1941.

At the end of the year the runways had been completed and lighted, and in December, the airport was opened to the airlines for use as an auxiliary field. Emergency radio and telephone circuits already had been installed.

While not the largest in the world, the new airport is of a size sufficient to provide, with future developments, for all forseeable air-line traffic. The safety and other aeronautical features of its design are well in excess of the usual requirements. Planes can glide in or take off at an angle as flat as 40-to-1 in eight directions to and from its four runways, at least two of which are long enough and broad enough to be equipped with blind-landing systems, and all of which are long enough to take care of any presently anticipated developments in transport planes' size or speed. At a later date, if needed, these runways can be paralleled at reasonable additional cost.

Engineering Library

Federal Airways System

During 1940 the C. A. A.'s program for expansion and extension of the Federal Airways System continued on a large scale. By the end of the year, an estimated 30,488 miles of adequately lighted airways, fully equipped with radio, communications, and weather-reporting facilities, were in operation throughout the United States and its possessions.

This compares with 28,745 miles of such airways in operation on July 1, 1940, indicating that the 1941 fiscal-year program already has brought completion of 1,743 miles of new aerial highways. By next July 1 the System is expected to aggregate 32,012 miles, an increase of 3,267 miles during the 12-month period.

In addition to the new mileage completed between July and January, at the end of the year there was another 496 miles already under construction and 1,038 miles had been surveyed.

By the end of the year, the System was complemented by 914 intermediate and auxiliary landing fields, which compares with 861 on last July 1 and an estimated 1,147 by next July 1.

Facilities installed on these airways included at the end of the year 2,261 beacon lights; 85 full-power combined broadcast and range radio aids; 136 medium-power radio range stations; and 35 low-power range stations.

Installation of the relatively static-free ultra-high-frequency radio equipment continued. As of January 1, there were two such radio stations in operation, 114 fan markers, and 1 instrument-approach system. Present plans contemplate that by July 1, 1941, there will be 10 range stations, 157 fan markers, and 9 instrument-approach systems.

An important undertaking in the airways development program has been the installation of radio facilities to serve foreign and territorial routes of American air carriers. Already in operation is a high-frequency radio station serving the trans-Atlantic route, while additional stations are being installed in San Francisco and Hawaii to augment present facilities on the trans-Pacific route. Opening of the Seattle to Juneau service has brought installation of similar equipment to serve this airway.

Cooperating with the Army, the C. A. A. moved forward during 1940 in the installation of equipment in Alaska which, in addition to serving commercial air carriers, is of national defense importance. These installations include point-to-point stations, additional simultaneous range and broadcast stations, and other airways aids.

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Air Safety

Reckless Pilots Cause Crashes, C. A. B. Warns

Bulletin Lists Recklessness Found in Records of Hundreds of Needless Air Accidents

Hundreds of needless air accidents are caused by recklessness by pilots, according to the Civil Aeronautics Board.

In studying the records of these accidents the Board has listed five conditions which have contributed much to causing air crashes.

Following is the Board's bulletin on recklessness, and additional reports on individual accidents, which list probable causes, contributing factors, and in many cases, comments as to how these types of accidents may be avoided by other airmen:

If You Would Be "Wreckless," Don't Be Reckless

Noah Webster, the man who wrote the dictionary, and the Civil Aeronautics Board see eye to eye as far as recklessness is concerned.

Webster's Dictionary says that being reckless is being "rashly negligent; heedless of consequences and danger; careless; thoughtless; foolhardy."

The C. A. B. studying the records of hundreds of needless airplane accidents, finds their perpetrators were guilty of:

1. Being *rashly negligent* in maintenance of their aircraft (improper wire connections, failure of controls due to faulty installations, and engine failures from use of low-grade fuels or improper parts not approved by the C. A. A., and running out of gas).
2. Being *heedless of consequences and danger* in engaging in acrobatics under any circumstances except in supervised training or as emergency maneuvers.
3. Being *careless* in observing the rule of minimum safe altitudes (for landplanes, 500 feet at all times; for seaplanes or amphibians, 300 feet over water).
4. Being *thoughtless* enough to fly an aircraft to the limits of its performance while at low altitudes (steep turns, climbing turns, flat glides).
5. Being *foolhardy*, with regard to flying while in improper physical condition.

DON'T BE RECKLESS!!! BE WRECKLESS!!!

HIGH WIND FATALLY INJURES PILOT AFTER RUDDER FAILURE FORCES JUMP.—Failure of rudder control in flight, necessitating a parachute jump into a high ground wind, caused an accident which brought fatal injuries to Private Pilot F. Bradley Bowers and minor injuries to his passenger, Jack White, near Salt Lake City, Utah, on March 31. Pilot Bowers and his passenger took off from the Salt Lake City Airport in Bowers' personally owned Cessna AW for the purpose of practicing spins. At an altitude of about 3,800 feet, the pilot executed a two-turn spin and recovered with a loss of about 1,000 feet in altitude. Upon pulling out of the recovery dive, the pilot turned off the ignition and told his passenger to jump, as the rudder control had failed. The pilot followed his passenger from the aircraft and both parachutes functioned normally. In accordance with instructions from the pilot, the passenger freed himself from the chute harness before landing and received minor injuries. The pilot, who did not free himself, received fatal injuries while being dragged across the ground by the high wind, which had a velocity of 35 to 40 miles an hour. Subsequent inspection of the plane wreckage revealed that the rudder cable turnbuckle of the aircraft had broken at the rudder horn. The turnbuckle was fastened in such manner that it was not free to turn and constant use of the rudder had caused the eyebolt to break.

Probable Cause.—Failure of rudder control in flight.

Contributing Factor.—Faulty inspection and maintenance.

Comment.—1. Those line inspections are important. 2. A jumper should endeavor to be facing down wind upon contact with the ground, then in a wind he can see where he is being pulled; he will be better able to stay on his feet by running with the chute; and he will be in better position to dump the wind out of the chute's canopy by pulling in the shroud lines.

STALL DURING LOW CLIMBING TURN ENDS IN CRASH.—A stall which developed as he executed a climbing turn at a dangerously low altitude at dusk resulted in a crash which brought serious injuries to Student Pilot Lester E. Gardner and to his passenger, William Merrihew, near Chamberlain, S. Dak., on March 19. Evidence indicates that near sunset on the day of the accident the pilot and his passenger were flying in the vicinity of Chamberlain at such dangerously low altitudes as to warrant the use of the term "contour flying." The aircraft was observed to be moving westward at a height of approximately 25 feet when the pilot attempted a climbing left turn to avoid striking the steeply rising terrain ahead. The plane stalled at an altitude of about 100 feet in this maneuver and fell to the ground on its wing and nose. The aircraft, a Porterfield CP–40, was demolished.

Probable Cause.—Pilot stalled the aircraft while executing a climbing turn at a dangerously low altitude.

Contributing Factors.—1. Inexperience of pilot. 2. Restricted visibility caused by approaching darkness.

Comments.—1. The regulations were being violated by flying low and by the carrying of a passenger. **Forty-three percent of the fatal accidents involving passengers during 1939 happened while students were piloting the aircraft.** 2. Steep climbing turns at low altitude should be avoided but if they must be done remember that his maneuver requires a lot of horsepower. 3. Plan flights to avoid the danger of flying in darkness.

TWO INJURED AS GLIDER STALLS.—A stall and spin during a low-altitude turn caused the accident near Plymouth, Mich., on April 28, in which Private Glider Pilot George P. Martin and his passenger, Louis E. Partch, Jr., were seriously injured. Glider Pilot Martin and his passenger took off from the Triangle Airport, near Plymouth, on a local glider flight. The take-off was effected by means of a power winch into an east-southeast wind, which was blowing about 10 miles an hour. At an altitude of about 700 feet, the towline was dropped and the pilot made several circles over the east end of the field. He then glided along the north side of the airport, preparatory to approaching for a landing. While making a slow left turn, the glider fell into a spin and crashed to the ground, first striking some telephone wires. The glider was registered as an LIT 2 P3 model.

Probable Cause.—Pilot stalled the glider in a slow left turn at low altitude.

PASSENGER DIES AS STUDENT STALLS PLANE.—Student Pilot Otis Guy Bacon stalled his aircraft at Frederick, Okla., on April 25, during a climb following take-off and spun to earth, with fatal injuries to his passenger, John Alexander, and serious injuries to himself. The student pilot, accompanied by his passenger, took off from Frederick Airport on a local pleasure flight. He held the aircraft in a steep climbing attitude following take-off for approximately one-half mile when flying speed apparently was lost. The aircraft immediately fell into a right spin from an altitude of approximately 300 feet. The spin continued until the aircraft, a Wiley Post A, struck the ground and was demolished. The air was gusty at the time of the accident.

Probable Cause.—Pilot stalled the aircraft during the climb following take-off.

Contributing Factors.—1. Inexperience of the pilot. 2. Turbulent air conditions.

Comment.—Forty-three percent of the fatal private flying accidents involving passengers in 1939 happened while student pilots were carrying passengers in violation of the regulation which prohibits this practice. Thirty-two passengers who died last year might now be alive if they had not risked their lives with student pilots.

LOW CLIMBING TURN BRINGS CRASH.—A stall after a climbing turn at low altitude caused a crash near Denver, Colo., on September 24, which resulted in fatal injuries to Passenger Don W. Searles and serious injuries to Pilot Jason R. Perkins. The pilot and his passenger took off from the Municipal Airport at Denver in a Luscombe 8 aircraft for a pleasure flight. The flight proceeded in a northwesterly direction for approximately 2 miles. On reaching the vicinity of the Denver radio range station, the pilot attempted a climbing turn to the right at an altitude of approximately 500 feet. The aircraft stalled during the turn and fell into a right spin. Partial recovery was effected at an altitude of about 150 feet after two turns in the spin. The aircraft, however, continued to settle until it struck the ground in a near level flying position and was demolished.

Probable Cause.—Pilot stalled the aircraft while executing a climbing turn at low altitude.

Comment.—A climb may require a large part of your reserve power, depending on its steepness. A turn also requires more power. The combination of the two may require more power than you can get out of your engine. Avoid steep, climbing turns near the ground!

FATAL CRASH OCCURS AS PASSENGER'S FOOT CATCHES CONTROLS.—Unintentional interference by the passenger with the aircraft controls during flight caused a crash near Minneapolis, Minn., on June 6, fatal to Commercial Pilot Leslie O. Walton and Passenger Harold A. Tinker. Pilot Wal, ton accompanied by his guest passenger took off from an auxiliary field near Minneapolis in a Piper J–3–C on a local flight. After the aircraft had attained an altitude of approximately 200 feet, the pilot was observed to execute a 180° turn and enter a shallow dive toward the field. The evidence indicates that the aircraft was placed in a level flight attitude as it passed over the field. The right wing dipped suddenly and as the aircraft settled to the ground, the right wing tip struck a spectator standing on the running board of a car parked near the north boundary of the field. The aircraft continued in a climbing right turn for a short distance and then fell to the ground and was demolished. Before his death, Pilot Walton stated that the heel of the passenger's shoe caught on the brace of the front seat, causing the foot to exert pressure on the right rudder control while the airplane was in level flight.

Probable Cause.—Unintentional interference by the passenger with the aircraft controls during flight.

Comments.—1. Airplane designers should protect all controls against such interference. 2. Passengers cannot be warned enough—**"Keep Clear of the Plane's Controls!"**

PILOT HURT IN CRASH OF HOMEMADE GLIDER.—Glider Pilot John Hess crashed and was seriously injured as a result of a stall during a low altitude turn near Larkspur, Colo., on July 27. Hess, in an effort to utilize a rising stream of air along the side of a ridge near Larkspur, attempted a flat nose-high turn. The Kunz-Patton glider stalled in the turn and crashed about 30 feet from the summit of the ridge.

Probable Cause.—Pilot stalled the glider during a flat nose-high turn at low altitude.

October Aero Gas Output 1,031,000 Barrels

Production of aviation gasoline in October totaled 1,031,000 barrels, a slight decrease from the 1,107,000 barrels produced in September but well above the output of 859,000 barrels in October 1939, the Bureau of Mines reported. Production during the first 10 months of this year reached 9,616,000 barrels.

Aviation gasoline exports in October totaled 291,000 barrels compared with 301,000 barrels in September and 287,000 in October of last year. Exports in the first 10 months of this year were 3,263,000 barrels against 3,588,000 barrels in the comparable 1939 period.

Stocks of aviation gasoline on hand at the end of October aggregated 6,142,000 barrels compared with stocks of 5,955,000 barrels at the end of September and 2,400,000 barrels at the end of October 1939. Domestic demand for October was 553,000 barrels against 463,000 barrels in September.

TWO INJURED AS ENGINE FAILURE FORCES LANDING ATTEMPT.—Undershooting a selected alfalfa field while attempting a forced landing, necessitated by engine failure, Private Pilot Herbert C. Williams, Toledo, Ohio, met with an accident near Toledo about 4 p. m. on May 21, which resulted in serious injury to himself and to his passenger, Frank M. Fisher, Toledo, and major damage to his aircraft, a Dart Model GK, glow-wing monoplane. The pilot, accompanied by a passenger, was flying locally at an altitude of approximately 2,200 feet when the engine lost power and commenced to vibrate. The pilot applied pressure to the fuel by use of the wobble pump. The engine resumed normal operation for a short time and then failed completely. The pilot selected an alfalfa field for a forced landing and descended rapidly in a steep gliding left turn. He undershot the selected area in the final approach stalling the aircraft at an altitude of approximately 75 feet. The aircraft fell to the ground in an adjoining cornfield at a point approximately 300 feet from the alfalfa field boundary and was demolished. Subsequent examination of the wreckage did not disclose the cause of the engine failure.

The probable cause.—Pilot stalled the aircraft during a gliding approach for a forced landing.

The contributing factor.—Engine failure.

CROP-DUSTER INJURED AS STALL DEVELOPS IN DUSTING OPERATIONS.—A climbing turn at low altitude ending in a stall, brought serious injury to Crop Duster A. D. Neill, and demolished a crop-dusting plane near Homestead, Fla., on March 30. The accident occurred about 7:55 a. m. when Pilot Neill, while engaged in dusting operations, pulled up at the end of a field in a left climbing turn. When about halfway through the turn at an altitude of approximately 60 feet, he retarded the throttle; the aircraft stalled and fell to the ground on its left wing and nose. The plane was a Stearman C–3B, powered by a 220-horsepower Wright engine. Evidence indicates that the pilot, who had 300 hours, had very limited experience in this type of flying and in this type of aircraft.

The probable cause.—The pilot stalled the aircraft during a climbing turn at low altitude.

The contributing factor.—Lack of experience of the pilot in the type of aircraft involved.

Private Flying

Student Pilot Rating Book Now Available

Revised Edition of 1939–40 Log Book Designed for Use in Civilian Pilot Training Program

A new rating (log) book, especially designed for students taking the controlled private flight course of C. P. T., has been placed on sale at 25 cents per copy by the Superintendent of Documents, United States Government Printing Office, Washington, D. C.

Known as the STUDENT PILOT RATING BOOK (*Private Course*), the publication is, in effect, a revised edition of the STUDENT PILOT LOG BOOK used in the 1939–40 program. The new rating book incorporates improvements and innovations which should add materially to its value and convenience in use from both the student's and the instructor's point of view.

The greater part of the book is made up of rating sheets and suggested lesson plans. There is a rating sheet provided for each lesson of the various stages (A, B, C, and D) of the controlled private flight course. These sheets, printed on odd (right) pages of the book, are for the entry of ground and flight time and the instructor's grading of the student's ability on the various maneuvers listed, as well as a check-off of the student's flying characteristics, such as attitude, special faults, etc.

Facing each rating sheet is a suggested flight plan for the particular lesson. These are to aid the instructor in following the controlled flight course.

In addition, the book outlines the general requirements of the controlled private flight course and gives suggestions to operators and instructors relative to the course and information as to the recommended use of the rating book, including method of grading. An instructor's affidavit form certifying to the amount of dual instruction and solo flying logged by the student, a form certifying that he has been given the required preliminary ground instruction, and forms for recording information on the cross-country flights of State D are included.

The new STUDENT PILOT RATING BOOK is somewhat larger than the old student log, consisting of some 150 pages and being of a trimmed size of 8⅜ by 5¼ inches.

AIR AGENCY CERTIFICATES

Schools Certificated

Arlen-Probert Aviation Corporation, L. A. Metropolitan Airport, Van Nuys, Calif., approved November 26, 1940, as an advanced flying school (private and commercial).

The University of Georgia School of Aviation, Inc., municipal airport, Athens, Ga., approved November 26, 1940, as an advanced flying school (private and commercial).

Lewistown Air School, Lewistown, Mont., approved December 9, 1940, as a primary flying school (private).

Sky Haven School of Aeronautics, Airport, Northfield, Ohio, approved December 9, 1940, as a primary flying school (private).

D. M. (Don) Teel, post office box 1646, Odessa, Tex., approved December 19, 1940, as an advanced flying school (private and commercial).

Southwest Airways, Inc., Sky Harbor Airport, Phoenix, Ariz., approved December 19, 1940, as an advanced flying school (private and commercial).

Repair Stations Certificated

Aero Repair Station, Moline Airport, Moline, Ill., approved December 4, 1940, for repair of aircraft welded-steel-tube structure, not including fittings; aircraft wooden structure not including box and laminated spars, wood-covered fuselages, wings, or control surfaces; aircraft fabric covering; aircraft wood-covered fuselages, wings, and control surfaces, and box and laminated spars; aircraft steel fittings; aircraft aluminum-alloy structure; aircraft aluminum-alloy fittings; aircraft assembly; aircraft wooden propellers; and aircraft engines.

Aircraft Sales Co., municipal airport, Fort Worth, Tex., approved December 2, 1940, for repair of aircraft welded-steel-tube structure; aircraft wooden structure; wood-covered fuselages, wings, and control surfaces, and box and laminated spars; aircraft steel fittings; aircraft aluminum-alloy structure; aircraft aluminum-alloy fittings; aircraft assembly; and aircraft engines.

Karl K. Kurth, municipal airport, Chattanooga, Tenn., approved December 20, 1940, for repair of aircraft welded-steel-tube structure, excluding fittings; aircraft wooden structure, not including box and laminated spars, wood-covered fuselages, wings, or control surfaces; aircraft fabric covering; aircraft assembly.

Mayes field, box 2104, Huntington, W. Va., approved December 2, 1940, for repair of aircraft welded-steel-tube structure; aircraft wooden structure, not including box and laminated spars, wood-covered fuselages, wings, or control surfaces; aircraft fabric covering; aircraft steel fittings; aircraft assembly; and aircraft engines.

Midwest Airways, Inc., box 147, Cudahy, Wis., approved December 20, 1940, for repair of aircraft welded-steel-tube structure; aircraft wooden structure; aircraft fabric covering; aircraft wood-covered fuselages, wings, and control surfaces, and box and laminated spars; aircraft steel fittings; and aircraft assembly.

Kenneth Starnes Flying Service, Inc., municipal airport, Conway, Ark., approved December 2, 1940, for repair of aircraft welded-steel-tube structure; aircraft wooden structure; aircraft fabric covering; aircraft wood-covered fuselages, wings, and control surfaces, and box and laminated spars; aircraft steel fittings; and aircraft assembly.

Transcontinental & Western Air., Inc., Union Air Terminal, Burbank, Calif., approved November 26, 1940, for repair of aircraft welded-steel-tube structure; aircraft fabric covering; aircraft steel fittings; aircraft aluminum-alloy structure; aircraft aluminum-alloy fittings; and aircraft assembly.

Wichita Falls Air Transport Inc., box 84, Wichita Falls, Tex., approved December 20, 1940, for repair of aircraft welded-steel-tube structure, excluding fittings; aircraft wooden structure, not including box and laminated spars, wood-covered fuselages, wings, or control surfaces.

Change in List of Repair Stations

Change address of Pan American Airways Co., from Baltimore, Md., to New York Municipal Airport, LaGuardia Field, Jackson Heights, Long Island, N. Y.

Change in List of Schools

Change Tred Avon Flying Service, Inc., Easton, Md., to an advanced flying school (private and commercial), December 20, 1940.

New Aeronautical Publications

Among recent Government publications dealing with the subject of aeronautics are the following:

STATE DEPARTMENT. EXECUTIVE AGREEMENT SERIES 175; Military aviation instructors, agreement between the

SEE PUBLICATIONS (*page 15*)

Air Transportation

U. S.-Canada Airline Agreement Announced

By an exchange of notes between the Secretary of State and the Chargé d'Affaires ad Interim of Canada, the Governments of the United States and Canada have entered into an arrangement accepting the recommendations of the competent aeronautical authorities of the two Governments resulting from a meeting of the representatives of these authorities held at Ottawa, Canada, on September 9 and 10, 1940. The arrangement became effective on December 3, 1940.

It was provided in article III of the air transport arrangement between the United States and Canada entered into on August 18, 1939, that the details of the application of the principle of reciprocity with respect to the operation of air transport services between the United States and Canada should be the subject of amicable adjustment between the competent aeronautical authorities of the two countries. As a result of the meeting at Ottawa in September 1940, these authorities recommended that article III should be given effect in accordance with the following enumerations:

International air transport services actually in operation between the two countries, for which certificates and permits have been issued by the respective Governments, to be confirmed. Services with respect to which applications for formal certificates or permits are now pending, other than those services specifically listed below, shall be subject to disposition at the sole discretion of the appropriate agency of the Government before which such applications are pending.

With respect to new services:

Each Government to take the appropriate steps to permit the operation by air carrier enterprises of the other, holding proper authorization from their own Governments, respectively, during the period ending December 31, 1942, in accordance with the following specification of the routes and of the nationalities of the air carriers by which service over each route will be operated between:

Bangor, Maine-Moncton, New Brunswick; United States.

New York, N. Y.-Toronto, Ontario; Canada.

Buffalo, N. Y.-Toronto, Ontario; United States.

Windsor, Ontario-Any point or points in the United States; United States.

Detroit, Mich.-Any point or points in Canada; Canada.

Great Falls, Mont.-Lethbridge, Alberta; United States.

The Canadian Government to cooperate in, or to permit or undertake the establishment on behalf of a United States air carrier, subject to Canadian law, of the necessary aids to air navigation, along the coast of British Columbia.

Further decisions with respect to routes and services to Alaska to be reserved for future consideration.

The arrangement resulting from the exchange of notes dated November 29, 1940, and December 2, 1940, will remain in effect until December 31, 1942. This arrangement provides that at least 6 months prior to December 31, 1942, a further conference of representatives of the competent aeronautical authorities of the two Governments will be called for the purpose of considering any revision or modification of the recommendations resulting from the meeting at Ottawa in September, 1940, as well as any new problems pertaining to air transport services which may have arisen in the interim.

Board Approves Transfer of P. A. A. Certificate

Cristobal, Canal Zone-Turbo, Colombia, Leg of FAM 5 Assigned to Uraba, Medellin and Central Airways

The Civil Aeronautics Board has approved the transfer of that portion of Pan American Airways' route certificate F. A. M. No. 5 between Cristobal, C. Z., and Turbo, Colombia, to Uraba, Medellin, and Central Airways, and amended the transferred portion to include the intermediate point Balboa, C. Z., and extended it to Medellin, Colombia. Uraba has been operating this route as a locally organized subsidiary and agent of Pan American since July 12, 1932.

Uraba had originally applied for a certificate under the "grandfather clause" of the Civil Aeronautics Act, but because of uncertainty as to its ability to meet the citizenship requirements, filed shortly afterwards a second application for a new route authorization. At a later date, after public hearing, the two carriers filed jointly the request for transfer of the operating certificate.

The Board denied the first application as, prior to September 20, 1938, Uraba did not fulfill the citizenship requirements of the act. Since that time, the requirements have been met. It denied in part the second application also, since the transfer made it unnecessary. It stated that the transfer was still further justified in that the record showed no need for the operation of two carriers over the route. Balboa and Medellin were added because the volume of traffic to these points was sufficient to require service by air and other means of transportation were slow and infrequent.

Right to a United States authorization to carry mail between Turbo and Medellin was denied since this latter part of the route is under the control of the Colombian post office and the Board found no reason to add payments by the United States.

Pan American's original certificate accordingly was modified to retain its complete route with only the elimination of the transferred portion. This route covers operation as follows:

(*a*) Between the terminal point Miami, Fla., the intermediate points Antilla, Cuba; Port-au-Prince, Haiti; San Pedro de Macoris, Dominican Republic; San Juan, P. R.; Charlotte Amalie (St. Thomas), Virgin Islands; St. Johns, Antigua; Pointe a Pitre, Guadeloupe; Fort de France, Martinique, Port of Spain, Trinidad; Georgetown, British Guiana; Paramaribo, Surinam (Dutch Guiana); Cayenne, French Guiana; Belem (Para), Sao Luiz (Maranhao), Luz Correa (except with respect to mail), Camocim, Areia Branca (except with respect to mail), Natal, Recife (Pernambuco), Maceio (except with respect to mail), Aracaju (except with respect to mail), Sao Salvador (Bahia), Caravellas (except with respect to mail), Victoria, Rio de Janeiro, and Porto Alegre, Brazil; Montevideo, Uruguay; and the terminal point Buenos Aires, Argentina; and also between the intermediate point Rio de Janeiro, Brazil, and the terminal point Buenos Aires, Argentina; via the intermediate points Sao Paulo, Curityba (except with respect to mail), Iguassu Falls (except with respect to mail), Brazil; and Asuncion, Paraguay; and also, except with respect to mail, between the intermediate point Port-au-Prince, Haiti, the intermediate point Santiago, Cuba, and the terminal point Kingston, Jamaica, B. W. I.

(*b*) Between the terminal point Miami, Fla., the intermediate point Havana, Cuba, and the terminal point Merida, Mexico.

(*c*) Between the terminal point Miami, Fla., the intermediate points Cienfuegos, Cuba, and Kingston, Jamaica, and the terminal point Cristobal, C. Z.; and also between the intermediate point Kingston, Jamaica, and the terminal point Barranquilla, Colombia.

(*d*) Between the terminal point Miami, Fla., the intermediate point Cat Cay, Bahama Islands (except with respect to mail), and the terminal point Nassau, Bahama Islands.

(*e*) Between the terminal point Brownsville, Tex., the intermediate points Tampico, Mexico City, and Tapachula, Mexico; Guatemala City, Guatemala; San Salvador, El Salvador; Tegucigalpa, Republic of Honduras; Managua, Nicaragua; San Jose, Costa Rica; David, Panama; Balboa, C. Z. (Ancon, C. Z., or Panama City, Panama); and the terminal point Cristobal, C. Z.

(*f*) Between the terminal point Cristobal, C. Z., the intermediate points Barranquilla, Colombia; Maracaibo, Coro, La Guaira, Guanta, and Caripito, Venezuela; and the terminal point Port of Spain, Trinidad, B. W. I.

Manufacturing and Production

October Aviation Exports up 937% over 1939 Month

United States exports of aeronautic products in October were valued at $31,388,506, according to the Motive Products Division, Department of Commerce.

This was an increase of 36 percent over shipments in September, and was an increase of 937 percent over exports in October 1939.

The exports consisted of 303 powered land planes, valued at $12,659,839; one land plane minus engine, at $950; 29 partial shipments of land planes to be assembled abroad, valued at $3,026,577, and two seaplanes at $189,200.

In addition, there was shipped 648 engines valued at $6,955,332; engine parts and accessories valued at $2,857,693, propellers and parts valued at $1,190,152, instruments and parts valued at $992,146, and other parts and accessories valued at $3,408,077.

Chief purchasers of aeronautic products in October were the United Kingdom, $20,118,840; Canada, $5,577,031; China, $2,337,471; and the Union of South Africa, $1,087,749.

The United Kingdom purchased 177 and Canada 102 planes for the month.

October exports raise the total for the first 10 months of 1940 to $252,868,467, as compared with $81,263,189 for the first 10 months of 1939.

ANC–5 Revision Now Available

Copies of the October 1940 revision of ANC–5, "Strength of Aircraft Elements," now can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 35 cents per copy.

This is the first revision of this publication, which was issued originally in January 1938 and which has been the Army - Navy - Civil standard on the strength of aircraft elements since that time.

Under the policy followed by the Civil Aeronautics Administration, free distribution of this document is made only to manufacturers actually engaged in aircraft production, and this distributing currently is being made.

C. A. B. Denies Inland Petition

The Civil Aeronautics Board has denied the application of Inland Air Lines, Inc., for an amendment to its certificate for route No. 35, between the terminal points, Cheyenne, Wyo., and Huron, S. Dak., to include an intermediate stop at Alliance, Nebr. The reason given by the Board was that the cost to the Government in additional mail pay would outweigh the value of the service, since the population to be served is comparatively small and Inland now serves Scottsbluff, only 55 miles distant by paved highway.

The other intermediate stops on route No. 35 now served are: Scottsbluff, Nebr., Hot Springs, Rapid City, Spearfish, and Pierre, S. Dak.

NEW TYPE APPROVALS

(Approval numbers and dates of assignment in parentheses)

Type Certificates

Propellers

Pilot, A100, wood; diameter, 6 feet 4⅜ inches; pitch, 3 feet 7 inches; 50 horsepower; 1,900 revolutions per minute. (755, November 28, 1940.)

Pilot, A104, wood; diameter, 6 feet ⅛ inch; pitch, 2 feet 10 inches; 50 horsepower, 2,300 revolutions per minute. (756, November 28, 1940.)

Pilot, A105, wood; diameter 6 feet 2½ inches; pitch, 3 feet 2 inches; 65 horsepower, 2,600 revolutions per minute. (758, November 28, 1940.)

Pilot, A106, wood; diameter, 5 feet 10¼ inches; pitch, 2 feet 9 inches; 75 horsepower, 2,600 revolutions per minute. (758, November 28, 1940.

NEW MODELS ADDED TO OLD TYPE APPROVALS

(Approval numbers and dates of approval of new models in parentheses)

Aircraft

Porterfield, 75–C, two-place closed land monoplane. Engine, Continental A–75–8. (Approved Type Certificate No. 611, November 26, 1940.)

Engines

Wright, double-row cyclone, GR–2600–A2A (709C14AC1). 14 radial air cooled—16:9 reduction gears, 1,350 horsepower at 2,300 revolutions per minute at 6,200 feet pressure altitude. (Approved Type Certificate No. 176, November 26, 1940.)

Propellers

Sensenich 84M, wood; diameter, 7 feet 0 inches; pitch, 5 feet 4 inches; 125 horsepower; 2,175 revolution per minute. (Approved Type Certificate No. 538, November 25, 1940.)

Appliances

Edo, floats, model 56–7850A. Displacement per float 7,850 pounds. (Type Certificate No. 81, November 18, 1940.)

Variety, low-pressure wheels, model VG–1750, 7.50–10, aluminum alloy cast. Approved static load per wheel 1,500 pounds. (Type Certificate No. 57, November 22, 1940.)

Pacific Alaska, skis, model PAA–5. Approved static load per ski 4,000 pounds. (Type Certificate No. 112, November 28, 1940.)

Chicago and Southern Gets Houston-Memphis Air Route

A majority of the members of the Civil Aeronautics Board, basing their decisions on necessary improvement to transportation between the rapidly growing cities of the Southwest and the Central and Eastern States, has granted a certificate to Chicago and Southern Air Lines, Inc., for operation between the terminal points, Houston, Tex., and Memphis, Tenn., with intermediate stops at Shreveport, La., and Pine Bluff, Ark. They also authorized an amendment to Eastern Air Lines, Inc.'s, route No. 47, between St. Louis, Mo., Evansville, Ind., and Nashville, Tenn., to extend service beyond Evansville to Louisville, Ky. They denied in part the applications of both lines and of Braniff Airways, Inc., asking for a route from Memphis to Evansville.

In a minority opinion, Harllee Branch, chairman of the Board, and George P. Baker, member, concurred with the majority in those sections of the opinion which recognized the need for service between Houston and Memphis, and between Evansville and Louisville; and in the present lack of need for service between Memphis and Evansville over the proposed route; and in the amending of Eastern's certificate to extend service between Evansville and Louisville. They dissented in the choice of Chicago and Southern for the Houston-Memphis route, saying that they considered the certificate should be granted to Braniff.

Rate Meeting Postponed; Carriers to File Briefs

The conference between representatives of the Civil Aeronautics Board and representatives of air transport lines to discuss proposed rate-making procedures has been postponed. Originally scheduled for December 3, no new date has been set.

Postponement was granted by the Board at the request of the air carriers upon representation by them that the pressure of a number of other emergency matters which have recently arisen made it impractical to proceed with the conference on that date.

The Board also granted a request of the carriers that they be permitted to submit their comments on rate-making procedures by briefs, and December 23 was set as the date upon which the briefs should be filed.

Reorganization

(Continued from page 1)

1. The construction, operation, and maintenance of the Federal Airways System.
2. The development and testing of radio aircraft devices and equipment of many types for eventual service use.
3. The development of airports.
4. The issuance of certificates of airworthiness for aircraft and components after tests and inspection; examination and certification of airmen, including the denial of aircraft, airmen, and other safety certificates when deemed necessary, and the renewal of existing certificates. Investigation of violations of the safety provisions of the Civil Aeronautics Act, as well as infringements of the safety rules promulgated by the Civil Aeronautics Board in the Civil Air Regulations.
   Training Program.
5. Adminstration of the Civilian Pilot

Airports Approved

(Continued from page 1)

"Improvements under this program have been limited to development of actual landing facilities, as these are essential; and none of our funds is being used for buildings, hangars, or other facilities not actually a part of the landing field.

"This policy is, of course, dictated by necessity. Our purpose, therefore, is to provide completed and useful improvement units at as many strategic locations as our funds will permit."

Colonel Connolly said the program will be supplemented and enlarged by coordinating it with the work and funds of other Federal agencies.

"For example," he said, "on a number of projects our funds will be used to extend or expand improvement work already being undertaken by the W. P. A. under the jurdisdiction of that agency. In some cases we can provide types of improvement not feasible on work-relief projects. But in no case will we permit our funds to be used in lieu of local contributions pledged by the sponsors of W. P. A. projects."

As between construction by contract or by day labor, the Administrator said the work is not limited to any particular method, and the policy is to employ whatever method appears most advantageous on a specific project. He indicated, however, that present plans involve the letting of contracts for a substantial portion of the total program. The contracts will be let by the C. A. A., and its regional managers will have full information available for interested parties at an early date.

The C. A. A. regional managers are: Region 1—John E. Sommers, LaGuardia Airport, New York, N. Y.; region 2—R. C. Copeland, Post Office Building, Atlanta, Ga.; region 3—Harold R. Neely, 1204 Post Office Building, Chicago, Ill.; region 4—L. C. Elliott, Post Office box 1689, Fort Worth, Tex.; region 5—Leonard W. Jurden, City Hall Building, Kansas City, Mo.; region 6—J. S. Marriott, 1508 Fourth Street, Santa Monica, Calif.; and region 7—R. D. Bedinger, King County Airport, Seattle, Wash.

The list of airport projects follows:

Project	*Amount*
AJO, ARIZ.	$70,422
To clear, grub, and fence entire field; install boundary lights; complete N/S landing strip 500 by 4,000 feet; complete SE/NW landing strip 500 by 4,000 feet; pave runway 150 by 4,000 feet; and oil 2 strips 150 by 4,000 feet.	
ALBANY, GA. (Municipal airport)	138,000
To pave NE/SW runway 100 by 4,250 feet, NW/SE runway 100 by 4,000 feet, and E/W runway 100 by 3,800 feet, and install field marking.	
ALLENTOWN-BETHLEHEM, Pa.	143,000
To construct NE/SW landing strip 500 by 4,000 feet and pave 100 foot runway thereon.	
AMERICUS, GA. (Souther Field)	50,000
To sponsor W.P.A. project to pave third runway 250 by 4,000 feet.	
ARIZONA STATE AIRPORT (Valle, Ariz.)	$102,588
To clear, grub, and drain entire field; fine-grade NW/SE, WSW/ENE., and NNE/SSW landing strips; install boundary lights and beacon; and fence entire airport.	
ASHEVILLE, N. C.	172,000
As a nonlabor allocation to W. P. A. to grade and drain 3 landing strips—NE/SW 500 by 4,000 feet, NW/SE 500 by 3,500 feet, and N/S 500 by 3,000 feet, and pave a 100-foot runway on the NE/SW strip; install basic lighting system.	
ASTORIA, OREG.	270,000
To complete fill; pave NW/SE runway 150 by 4,000 feet; install drains, drainage facilities move lights, clear east of runway; and pave taxi strip leading to NW/SE runway.	
ATLANTA, GA. (municipal airport)	250,000
To sponsor a W. P. A. project to pave a 150- by 1,500-foot extension to the NW/SE runway and a new NE/SW runway 150 by 3,400 feet; and install additions to and reconstruct present lighting system.	
ATLANTA, GA. (Camp Gordon)	150,000
To provide nonlabor funds for a W. P. A. project totaling approximately $291,000, which will provide a 1,000-foot extension to the NW/SE landing strip; and pave 3 runways—150 by 3,900 feet, 150 by 3,500 feet, and 150 by 3,200 feet, and taxi strips and aprons, and install contact and basic lighting systems.	
AUGUSTA, GA. (municipal airport)	52,000
To sponsor a W. P. A. project to the amount of $40,000 for the completion of grading the field and building area; $12,000 for contact lights.	
AUGUSTA, MAINE	$220,000
To extend N/S landing strip to 500 by 3,400 feet and widen, extend, and pave runway to 100 by 3,400 feet, and to grade and extend E/W landing strip to 500 by 2,800 feet.	
AUSTIN, TEX.	321,000
To grade, drain, and pave E/W runway and NW/SE runway, each 150 by 4,150 feet; install beacon, boundary range, and obstruction lights and control panel; and fence entire field.	
BAKER, OREG.	95,000
To extend NW/SE runway to 4,850 feet and pave 100 by 4,850 feet; extend and gravel N/S landing strip to 4,360 feet (150 by 940 feet); extend and gravel E/W landing strip to 4,000 feet (150 by 1,660 feet); and install boundary and range lights and drains for entire field.	
BAKERSFIELD, CALIF.	307,729
To install necessary contact lights and control panel; and grade and reconstruct N/S taxi strip 150 by 1,840 feet.	
BANGOR, MAINE (municipal)	88,000
To provide a nonlabor allocation to W. P. A. to extend the NW/SE, N/S, and E/W landing strips to 500 by 5,000 feet and pave 150-foot runways thereon; install drainage, basic lighting system, contact and floodlights.	
BANGOR, MAINE (Bangor Municipal No. 2 Airport)	172,000
To clear, grub, grade, drain, seed, and fence 3 landing strips; NE/SW, NW/SE, and E/W, each 500 by 3,000 feet, and gravel runways thereon 100 by 2,000 feet.	
BAR HARBOR, MAINE	110,000
To extend and widen NE/SW landing strip to 500 by 3,000 feet and pave 100-foot runway thereon; install contact lights.	

Airways and Airports

AERONAUTICAL CHARTS

During November the following new editions of aeronautical charts were issued by the United States Coast and Geodetic Survey. Pilots are warned that the previous editions of the same charts are canceled and now are obsolete.

Regional and direction-finding (DF) charts are sold for 40 cents each, while sectional charts are 25 cents each. On orders grossing $10 or more, a 33⅓ percent discount is allowed. Copies of these charts may be obtained from the Coast and Geodetic Survey, Washington, D. C., and from recognized dealers at major cities and airports.

New Aeronautical Chart

3060b. Aeronautical Planning Chart of the United States. November 1940. Scale 1:5,000,000. Size, 26 by 40 inches. Price, 40c.

Lithographed in 9 colors, this new chart is on the same projection and scale as chart 3060a, which it replaces. More than 1,200 towns, about 400 airports, and the designated civil airways have been added. The controlled and uncontrolled civil airways are indicated in red by solid or double fine lines, respectively. The value of the new chart has also been augmented by the addition of more streams, spot elevations, and particularly the addition of the 3,000-, 5,000-, 7,000-, and 9,000-foot contours and gradient tints of elevations. The meridians and parallels along the borders of the sectional charts have been divided into 10-minute spaces. These graduations also outline the limits of the sectional charts covering the United States. For convenience the chart names have been placed diagonally across the southeast corner of the area covered by each of the sectional charts.

New Edition of Regional Aeronautical Chart

14–M. November 1940. Size, 26 by 45 inches. Located in latitude 32°–38° N., longitude 75°–87° W., covering an area of about 295,000 square miles. Addition of the civil airways and changes since the last edition.

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BARRE-MONTPELIER, VT $159,000

As a nonlabor allocation to W. P. A. to extend and widen N/S landing strip to 500 by 4,000 feet, extend and widen N/S runway to 150 by 4,000 feet, extend and widen NE/SW landing strip to 500 by 3,600 feet, and extend and widen NE/SW runway to 150 by 3,600 feet; to relocate roads and install all lighting except floodlights on both runways.

BATON ROUGE, LA 378,000

To pave N/S runway 150 by 4,600 feet, and install boundary, range and obstruction lights, and beacon, code beacon, and control panel; pave NW/SE runway 150 by 4,700 feet; pave NE/SW runway 150 by 4,600 feet; pave taxiway to intersection of N/S, NE/SW, and NW/SE runway, and 17,500 square yards of terminal apron; and install 600 feet of 36-inch drainage pipe and 1 catch basin.

BATTLE CREEK, MICH $381,000

To provide clearing, grubbing, grading, drainage, seeding, and fencing; install basic lighting system; pave N/S and NE/SW runways; and perform other necessary appurtenant work.

BELLINGHAM, WASH 160,000

To pave NE/SW runway 150 by 5,000 feet and grade and pave N/S runway 150 by 4,500 feet; and install drainage and lighting systems.

BENDIX, N. J 282,000

To extend NE/SW and N/S landing strips to 500 by 4,000 feet and pave 100-foot runway thereon; install basic lighting system.

BERLIN (MILAN), N. H $50,000

As a nonlabor allocation to W. P. A. to clear and grade N/S landing strip 500 by 5,000 feet.

BOSTON AUXILIARY AIRPORT, BEDFORD, MASS 198,000

To pave a 100- by 4,000-foot runway.

BIG SPRING, TEX 150,000

To provide the necessary clearing, grading, and drainage and pave a NE/SW runway, 150 by 5,460 feet; widen, extend, and resurface N/S runway to 150 by 5,460 feet; extend N/W and NW/SE runways to 150 by 5,460 feet; install a beacon, code beacon, control panel, boundary, range, and obstruction lights; and fence entire field.

BILLINGS, MONT 200,000

To stabilize E/W runway, extend pavement to 5,400 feet (200 by 2,800 feet); grade and pave seven runways NE/SW 150 by 5,400 feet, NW/SE 150 by 5,400 feet, N/S 150 by 5,250 feet; E/W 150 by 5,400, NE/SW 150 by 5,400 feet, NW/SE 150 by 5,400 feet, and N/S 150 by 5,400 feet; install drains and lights; grade and stabilize taxi strips to NE (75 by 4,050 feet); construct visual traffic control tower with radio; and install contact lights and approach beacons for instrument landings on E/W runway.

BISMARCK, N. DAK 50,000

To construct stabilized base course and bituminous wearing surface NW/SE runway 100 by 4,800 feet and other necessary and appurtenant work.

BOISE, IDAHO 256,000

To pave three runways, NW/SE 150 by 5,500 feet, E/W 150 by 3,700 feet, N/S 150 by 4,100 feet, and to widen and pave NW/SE runway 50 feet (200 by 5,500 feet).

BOZEMAN, MONT 47,000

To grade and prepare field, move telephone line, construct new road; install lights and facilities (boundary, range, and obstruction); and relocate irrigation ditch.

BRIDGEPORT, CONN 190,000

As a nonlabor allocation to W. P. A. to extend the WNW/SSE landing strip to 500 by 3,500 feet and pave runway thereon 150 feet in width.

BRIDGETON, N. J. (Millville Airport) 197,000

To construct E/W and N/S landing strips 500 by 4,000 feet and pave 100-foot runway thereon; this work includes clearing, grubbing and grading all areas and installation of drainage and basic lighting systems.

BROWNWOOD, TEX 133,000

To pave N/S runway 150 by 4,330 feet including clearing, grubbing, grading, drainage, seeding and/or sodding for 580-foot landing strip extension, and contact lights; pave NE/SW runway 150 by 4,330 feet including grading, drainage, seeding and/or sodding for 1,330-foot landing strip extension; pave apron and taxi strips to intersection of runways including grading and drainage; install boundary, range and obstruction lights; and fence field.

BUFFALO, N. Y 183,000

To extend the E/W landing strip to 500 by 3,700 feet and pave 150-foot runway thereon, pave 100- by 2,300-foot N/S runway, and pave 100 by 100 feet of the NW/SE runway.

AIRPORTS OF ENTRY

As of the end of 1940, there were 58 airports and seaplane bases designated as airports of entry through which aircraft arriving in the United States from foreign countries may clear customs and immigration.

Airports of entry are designated by the Treasury Department after consultation with representatives of other interested Federal agencies and due consideration as to the necessity for such designation. Some are designated without time limit, while others are given temporary designation for the period of 1 year, as shown in the accompanying tables.

Without time limit

Location	Name	Location	Name
Ajo, Ariz	Municipal airport.	Miami, Fla	Dinner Key Seaplane Base.
Albany, N. Y	Municipal field.	Nogales, Ariz	Nogales Municipal Airport.
Brownsville, Tex	Municipal airport.	Ogdensburg, N. Y	Ogdensburg Harbor.
Buffalo, N. Y	Do.	Pembina, N. Dak	Fort Pembina Airport.
Caribou, Maine	Caribou Municipal Airport	Portal, N. Dak	Portal Airport.
Cleveland, Ohio	Cleveland Municipal Airport.	Port Townsend, Wash.	Port Townsend Airport.
Detroit, Mich	Detroit Municipal Airport.	Put-in-Bay, Ohio	Put-in-Bay Airport.
Do	Ford Airport.	Rochester, N. Y	Rochester Municipal Airport.
Do	Wayne County Airport.	Rouses Point, N. Y	Rouses Point Seaplane Base.
Douglas, Ariz	Douglas Airport.	San Diego, Calif	San Diego Municipal Airport (Lindbergh Field).
Duluth, Minn	Duluth Municipal Airport.	San Juan, P. R	Isla Grande Airport.
Do	Duluth Boat Club Seaplane Base.	Seattle, Wash	Boeing Municipal Air Field.
Eagle Pass, Tex	Eagle Pass Airport.	Do	Lake Union.
El Paso, Tex	Municipal airport.	Skagway, Alaska	Skagway Municipal Airport.
Fairbanks, Alaska	Weeks Municipal Airfield.	Swanton, Vt	Missisquoi Airport.
Juneau, Alaska	Juneau Airport.	West Palm Beach, Fla.	Roosevelt Flying Service Base (Currie Common Park).
Ketchikan, Alaska	Ketchikan Airport.	Wrangell, Alaska	Wrangell Seaplane Base.
Key West, Fla	Meacham Field.		
Laredo, Tex	Laredo Airdrome.		
Miami, Fla	Pan-American Field (or 36th St.).		

Temporary (1 year)

Location	Name	Date designated
Akron, Ohio [1]	Municipal Airport	Apr. 8, 1940
Bangor, Maine	Bangor Municipal Airport	June 26, 1940
Bellingham, Wash	Graham Airport	Apr. 18, 1940
Buffalo, N. Y	Buffalo Launch Club Seaplane Anchorage	Oct. 16, 1940
Burlington, Vt	Burlington Municipal Airport	June 29, 1940
Calexico, Calif	Calexico Municipal Airport	Jan. 10, 1940
Cape Vincent, N. Y	Cape Vincent Harbor	Apr. 25, 1940
Fort Yukon, Alaska	Fort Yukon Airfield	July 6, 1940
Great Falls, Mont	Great Falls Municipal Airport	June 2, 1940
Havre, Mont	Havre Municipal Airport	Do
Houlton, Maine	Houlton Airport	Oct. 7, 1940
Malone, N. Y	Malone Airport	Apr. 18, 1940
Miami, Fla	Chalks Flying Service Airport	Sept. 17, 1940
Niagara Falls, N. Y	Niagara Falls Municipal Airport	July 2, 1940
Plattsburg, N. Y	Plattsburg Municipal Airport	June 2, 1940
Sandusky, Ohio	John G. Hinde Airport	June 1, 1940
Sault Ste. Marie, Mich	Sault Ste. Marie Airport	Aug. 4, 1940
Spokane, Wash	Spokane Municipal Airport (Felts Field)	June 2, 1940
Warroad, Minn	Warroad Seaplane Base	Sept. 2, 1940
Watertown, N. Y	Watertown Municipal Airport	June 2, 1940
Wellesley Island, N. Y	Wellesley Farms Airport	May 1, 1940
	Wellesley Island Seaplane Base	

[1] Designated a temporary airport of entry without time limit, but not an airport of entry for aliens.

BURLEY, IDAHO — $49,160

To extend, widen and pave NE/SW runway to 200 by 4,127 feet, pave NW/SE 150 by 4,040 feet; and NNE/SSW 150 by 4,040 feet; and install drains and lights for both runways.

BURLINGTON, VT — 227,000

As a nonlabor allocation to W. P. A. to extend and widen E/W runway to 150 by 3,375 feet, N/S runway to 150 by 3,650 feet; construct NE/SW runway 150 by 4,000 feet; install contact lights on all runways; and resurface existing paved runways.

BUTTE, MONT — 100,000

To complete construction of NE/SW runway to 150 by 5,560 feet and extend NW/SE runway to 5,560 feet (150 by 1,260 feet).

CASPER, WYO — 223,000

To grade, drain, seed and fence entire field and install boundary, range and obstruction lights.

CHARLESTON, S. C. — 177,000

To clear, grub, grade and drain all landing strips to 500 feet in width and lengthen 150 feet pavement on the E/W, NE/SW, and N/S runways to 5,000 feet; and reconstruct present and install additional lighting system.

CHARLOTTE, N. C. (municipal airport) — 30,000

To sponsor a W. P. A. project to extend the E/W landing strip from 2,500 to 3,100 feet and pave 150 by 600 feet of same.

CHEYENNE, WYO. — 155,000

To widen and extend the NW/SE runway to 150 by 5,900 feet and grade, widen, and extend the N/S runway to 150 by 5,545 feet; drain area adjacent to administration building and collect runway drainage; modernize lighting system; construct taxi strips to the NW/SE, N/S, and E/W runways; and install contact lights on the E/W runway.

CHICAGO, ILL. — 20,000

As a nonlabor allocation to W. P. A. to widen E/W taxi strip 50 feet, provide additional drainage required and other necessary and appurtenant work.

CLEVELAND, OHIO — 190,000

To extend and pave the E/W and NE/SW runways to 5,000 feet and perform other necessary and appurtenant work.

COLLEGE STATION, TEX. — 75,000

To provide the necessary grading, seeding, sodding, and drainage for three 500- by 4,200-foot landing strips; and installation of basic lighting system.

COLUMBIA, S. C. (new municipal) — 319,000

To clear, grub, grade, and drain a NE/SW landing strip 600 by 4,650 feet and pave same 100 by 4,500 feet; and E/W landing strip 600 by 3,100 feet and pave same 100 by 3,000 feet; pave two taxi strips; and install basic lighting system and field marking.

CORPUS CHRISTI, TEX. — 184,000

To clear, grade, drain, and pave N/S runway 150 by 4,250 feet; grade, drain, and pave E/W runway 150 by 3,900 feet; and fence field.

DAYTONA BEACH, FLA. — 156,000

To extend, widen, and pave the E/W, N/S, NE/SW, and NW/SE runways to 150 by 4,000 feet and install additional basic lighting system to cover; install contact lights.

DEL RIO, TEX. — $122,000

To provide necessary clearing, grading, drainage, and seeding for landing strips as follows: Two 500 by 4,000 feet, one 500 by 4,200 feet, and one 500 by 4,700 feet; install boundary, range and obstruction lights, a beacon and control panel; and fence entire field.

DOTHAN, ALA. — 121,000

To pave the NE/SW and NW/SE runways 100 by 3,500 feet each and the N/S runway 100 by 3,000 feet; pave taxi strip; and install field marking.

DOVER, DEL. — 170,000

To construct E/W and N/S landing strips 500 by 4,000 feet and pave same 100 by 4,000 feet; provide drainage; and install basic lighting system.

EAGLE PASS, TEX. — 75,000

To grade, drain, and pave NW/SE runway 150 by 4,230 feet and install range and contact lights; grade, drain, and pave NE/SW runway 150 by 4,230 feet and install range lights; install boundary and obstruction lights, beacon, wind tee, and control panel; fence field; and drill well.

ELKO, NEV. — 90,000

As a nonlabor allocation to W. P. A. to widen and extend the NE/SW landing strip 400 by 2,000 feet and pave 150 by 6,000 foot runway thereon; install contact, range, obstruction lights, and necessary drainage.

ENDICOTT, N. Y. — 124,000

To widen and extend the NE/SW landing strip 500 by 3,500 feet and pave 100-foot runway thereon, widen and extend E/W landing strip to 500 by 3,270 feet and pave 100-foot runway thereon; install boundary lights and drainage system.

ERIE, PA. — 90,000

As a nonlabor contribution to W. P. A. to extend the NE/SW, E/W, and N/S landing strips to 600 by 4,000 feet and pave 100-foot runways thereon; install drainage and basic lighting ing systems.

EUGENE, OREG. (new site) — 250,000

To grade entire field; grade and pave NW/SE runway 150 by 4,000 feet; install drains and contact lights, boundary lights, beacon with range and obstruction lights; and grade and pave N/S runway 150 by 4,000 feet and install drains and contact lights.

FARGO, N. DAK. — 300,000

To provide necessary extension to boundary light circuit and grade, drain, and pave the NW/SE, NE/SW, and N/S runways each 100 by 3,500 feet; and perform other necessary and appurtenant work.

FOLEY, ALA. — 40,000

To provide nonlabor funds for sponsoring a W. P. A. project to clear, grub, grade, and drain three landing strips each 600 by 3,200 feet.

FORT MYERS, FLA. — 82,000

To pave E/W runway 150 by 4,000 feet; pave taxi strips; and install basic lighting system.

FORT WAYNE, IND. — 631,000

To grade, drain, pave, and install contact lights on three runways: NW/SE, NE/SW and N/S, each 150 by 4,000 feet; grade, drain, and pave taxi strip and apron; install boundary lights, fencing; rotating and code beacons and tower, and provide other necessary and appurtenant work.

GALVESTON, TEX. — $205,000

To clear, grade, drain, seed, and fence entire field; install beacon, boundary, range and obstruction lights and control panel; pave NW/SE runway 150 by 4,015 feet.

GARDNER, KANS. — 188,000

To clear and grub 415 acres and grade, drain, fence, and seed 192 acres; install a beacon, code beacon, boundary, range and obstruction lights.

GRAND FORKS, N. DAK. — 11,000

To install basic field lighting system and perform other necessary and appurtenant work.

GREAT FALLS, MONT. — 132,000

To pave the NE/SW runway 150 by 5,940 feet and E/W runway 150 by 4,150 feet; and install contact lights.

GREENVILLE, MAINE — 83,000

To construct NW/SE landing strip 500 by 3,000 feet and pave 150-foot runway thereon; clear, grade, and seed intermediate area.

HAGERSTOWN, MD. — 105,000

As a nonlabor allocation to W. P. A. to extend N/S and E/W landing strips to 500 by 4,000 feet and pave 100-foot runways thereon; install drainage facilities and basic lighting system.

HARRISBURG, PA. — 35,000

As a nonlabor allocation to W. P. A. to extend NE/SW landing strip to 500 by 5,000 feet and pave 150-foot runway thereon; and install drainage and basic lighting systems.

HARTFORD (WINDSOR LOCKS), CONN. (municipal No. 2 airport).

To clear, grub, and grade 262 acres and install boundary lights.

HOMESTEAD, FLA. — 156,000

To clear, grub, grade, and sod three landing strips, B/W, NW/SE, and NE/SW, each 1,000 by 5,280 feet; pave each of above 150 by 4,000 feet; and install basic lighting system.

HOULTON, MAINE — 135,000

As a nonlabor allocation to W. P. A. to extend the NE/SW and N/S landing strips to 500 by 4,000 feet and pave 150-foot runways thereon; install all lighting facilities except contact lights on E/W runway.

HOUSTON, TEX. — 297,000

To strengthen and stabilize shell base and pave N/S runway 150 by 4,500 feet; modernize lighting system; grade, drain, and fence west side of N/S taxiway; strengthen and stabilize shell base and pave NW/SE runway 150 by 4,500 feet.

HYANNIS, MASS. — 125,000

As a nonlabor W. P. A. allocation to extend the NW/SE landing strip to 500 by 3,500 feet and pave a 150-foot runway thereon; pave taxi strips and apron; and complete basic lighting system and contact lights.

IDAHO FALLS, IDAHO — 37,300

To extend and pave N/S runway to 4,350 feet (150 by 500 feet) and install drains and lights.

JACKSON, MISS. (municipal No. 2 airport) — 100,000

To provide sponsor's funds for nonlabor cost to W. P. A. to clear, grub, grade, and drain three landing strips as follows: 500 by 3,850 feet, 500 by 3,350 feet; and 500 by 3,000 feet; fence entire field and install basic lighting system.

JACKSON, MISS. (municipal airport) — $100,000

As a nonlabor allocation to W. P. A. to pave two new runways 150 by 4,450 feet and 150 by 4,600 feet; widen NE/SW from 100 to 150 feet and lengthen to 3,300 feet; pave taxiways and install basic lighting system.

JACKSON, TENN — 120,000

As a nonlabor allocation to W. P. A. to pave two 100- by 3,600-foot runways and the necessary taxiways.

JACKSONVILLE, FLA (municipal airport) — 149,000

To resurface existing runway system and extend NW/SE runway to 4,500 feet and widen E/W runway from 150 to 200 feet and install contact lights. (Funds to sponsor W. P. A. project.)

JOHNSTOWN, PA — 400,000

As a nonlabor allocation to W. P. A. to construct NE/SW and NW/SE landing strips 500 by 4,500 feet and pave 100-foot runways thereon; and install drainage and basic lighting systems.

KITSAP COUNTY (BREMERTON), WASH. (Kitsap County Airport) — 230,000

To extend and pave NE/SW runway to 500 by 4,000 feet; pave taxi strip 75 by 4,650 feet; install sewerage and lighting systems; construct concrete warm-up platform 50 by 500 feet; seed the intermediate areas; and move house. To pave one additional runway.

KLAMATH FALLS, OREG — 254,000

To grade and pave NW/SE runway 150 by 5,100 feet, install drains, remove power lines; grade and pave NE/SW runway, 150 by 4,600 feet; install drains; and install boundary, range, obstruction, and beacon lights.

LACONIA (GILFORD) N. H — 239,000

To clear and grade E/W landing strip 500 by 4,000 feet and N/S landing strip 500 by 3,500 feet and install basic lighting system.

LA GRANDE, OREG — 35,000

To complete graveling N/S runway 150 by 1,540 feet (4,740 feet); E/W runway 150 by 4,500 feet; install drains; remove obstructions; and pave taxi strips and aprons.

LA JUNTA, COLO — 87,000

To clear, grade, and seed all landing strips; install a beacon, code beacon, and boundary, range, and obstruction lights; and apply a soil-binding preparation on NW/SE landing strip, 150 by 5,000 feet.

LAKE CITY, FLA — 85,000

To grade, drain, and pave the E/W, NW/SE, and NE/SW runways 100 by 3,500 feet and clear approaches.

LAKELAND, FLA. (municipal No. 2 airport) — 80,000

To clear, grub, grade, drain, and sod landing area; pave the NW/SE, NE/SW, and E/W runways each 100 by 3,000 feet; pave taxi strips and install basic lighting system.

LAS VEGAS, NEV — 340,000

To clear, grade, and drain field; construct N/S runway 300 by 5,900 feet; E/W runway 300 by 4,000 feet; and NE/SW runway 300 by 2,550 feet; and install boundary lights.

LAS VEGAS, N. MEX — 137,000

To clear, drain, and pave NE/SW runway 150 by 6,100 feet; install boundary, range, obstruction, flood, and contact lights, beacon, code beacon, and control panel; and fence field.

LAWRENCE, MASS — $40,000

To sponsor a W. P. A. Project to extend and widen N/S landing strip to 500 by 3,500 feet and pave runway extension 100 feet in width.

LEWISTON, MONT — 120,000

To complete and pave E/W runway 200 by 5,050 feet, install contact lights (pavement 100 feet); grade, gravel, and pave NE/SW runway 150 by 4,950 feet, install drains and contact lights (pavement 100 feet, base 150 feet); grade, gravel, and pave E/W taxi strip 75 by 1,400 feet, and apron 100 by 800 feet and install drains.

LEXINGTON, KY — 57,000

As a nonlabor allocation to W. P. A. to clear, grub, grade, drain, top soil, seed, and fence landing area.

LITTLE ROCK, ARK — 10,000

As a nonlabor allocation to W. P. A. to provide for anticipated additional costs as a result of the recent change in plans involving the relocation of the administration building site. Estimated cost of work to be accomplished, $25,000.

LONG BEACH, CALIF — 155,414

To contruct and contact light E/W runway 150 by 5,600 feet; and contact light N/S runway on east side.

LOG ANGELES, CALIF — 70,000

Install lighting and appurtenant electrical work on B. E. & F. runways.

LOUISVILLE, KY. (Bowman Field) — 12,000

To provide contact lighting for the NE/SW, NW/SE and E/S runways; and perform other necessary and appurtenant work.

LOUISVILLE, KY. (municipal No. 2 airport) — 111,000

To provide clearing, grubbing, seeding, fencing, fine grading, and basic lighting, and other necessary and appurtenant work.

LYNCHBURG, VA — 133,000

As a nonlaborer allocation to W. P. A. to widen and extend N/S landing strip to 500 by 4,000 feet and pave 150-foot runway thereon; install drainage and basic lighting systems.

MACON, GA. (municipal airport) — 50,000

For contact lighting and light surface treatment on three runways, by contract.

MASSENA, N. Y — 100,000

To construct NE/SE and NW/SE landing strips 500 by 3,000 feet and pave 100-foot runways thereon.

MEDFORD, OREG — 282,000

To gravel and pave E/W landing strip 300 by 4,500 feet (paving 150 feet), install drains and lights; construct and pave aprons and taxi strips 75 and 150 by 6,700 feet.

MELBOURNE, FLA — 59,000

To surface four runways: NW/SE, N/S, NE/SW, and E/W runways to 150 by 3,500 feet and install basic lighting system.

MEMPHIS, TENN — 127,000

Thickening and strengthening existing runways and taxi system.

MERIDIAN, MISS. (Key Field) — 141,000

To grade and sod E/W landing strip 500 by 4,000 feet and pave same 150 by 4,000 feet.

MIAMI, FLA — $200,000

To complete paving E/W runway to 200 by 5,400 feet; pave taxi strips, a 250- by 1,150-foot apron and N and S wing aprons and taxiways; install water supply system, drainage system, storm and sanitary sewers, and complete lighting system including contact lights; and complete grading, mucking, and grassing of intermediate areas.

MIDDLEBURG, FLA — 88,000

To pave NE/SW runway 150 by 2,600 feet and NW/SE runway 150 by 2,600 feet.

MILES CITY, MONT — 64,000

To pave NW/SE runway 150 by 4,400 feet; install drainage, fence, and grade entire field area.

MILLINOCKET, MAINE — 152,000

As a nonlabor allocation to W. P. A. to extend the E/W and N/S landing strips to 500 by 5,000 feet and pave 150-foot runways thereon; install basic lighting system and control panel.

MILWAUKEE, WIS — 80,000

To extend and pave the E/W runway 100 by 800 feet and the NE/SW runway 100 by 1,000 feet; revamp basic lighting system, provide floodlights and perform other necessary and appurtenant work.

MISSOULA, MONT — 236,000

To pave three runways NW/SE 200 by 7,050 feet, N/S 150 by 5,900 feet, E/W 150 by 6,400 feet; install drains and contact lights; pave taxiways, aprons, and roadways; install domestic water supply, sewage disposal system, field lighting and electrical supply systems.

MOBILE, ALA — 158,000

To pave N/S runway 150 by 3,500 feet, E/W runway 150 by 4,000 feet, taxi strip and apron; install basic lighting system and field marking.

MONTGOMERY, ALA. (municipal No. 2 airport — 200,000

To provide nonlabor funds for sponsoring a W. P. A. project to clear, grub, grade, drain, and perform other incidental work necessary for class 3 airport.

MORRISTOWN, N. J — 383,000

To construct NE/SW and NW/SE landing strips 500 by 4,000 feet and pave 100-foot runways thereon; and install basic lighting and drainage systems.

MUSKOGEE, OKLA. (municipal airport) — 51,000

To extend N/S runway to 150 by 2,500 feet and the NW/SE runway to 150 by 3,730 feet, including the necessary grading, surfacing, and drainage facilities.

MUSKOGEE, OKLA. (municipal No. 2) — 60,000

To grade and seed N/S, NW/SE, and NE/SW landing strips each 500 by 2,000 feet; install day markers; and fence entire field and construct automobile parking area.

MYRTLE BEACH, S. C. (municipal) — 111,000

To pave N/S and E/W runways 100 by 4,000 feet and a 100-foot apron.

NEW ORLEANS, LA. (Menefee Airport, municipal No. 2) — 280,000

To clear, grub, grade, and drain entire landing area to provide four useful landing strips 500 by 4,000 feet; install beacon, boundary, range, and obstruction lights.

NEW ORLEANS, LA. (New Orleans Airport) — $58,000

To construct a paved taxiway from the loading apron in front of the administration building to the intersection of the N/S and NW/SE runways, 75 by 3,200 feet.

NEW ORLEANS, LA. (New Navy Airport) — 258,000

As a nonlabor allocation to W. P. A. to assist in the development of this new Navy airport.

NIAGARA FALLS, N. Y. — 300,000

As a nonlabor allocation to W. P. A. to extend the E/W, N/S, NE/SE, and NW/SE landing strips to 500 by 4,000 feet and pave 150-foot runways thereon, taxiways, and apron.

NORFOLK, VA. — 75,000

To pave the prevailing wind runway 100 by 3,500 feet.

NORTH PLATTE, NEBR. — 94,000

To provide the necessary clearing, grading, and drainage for a NW/SE runway, 150 by 5,000 feet, and an E/W runway, 150 by 4,600 feet, and install contact lights on all runways.

OCALA, FLA. — 62,000

To clear, grub, drain, grade, and sod NW/SE landing strip 500 by 3,200 feet and pave same 100 by 3,000 feet; and install basic lighting system.

OGDEN, UTAH. — 214,915

To clear site of all obstructions and fence entire field; and construct N/S landing strip and runway 200 by 6,200 feet.

OKLAHOMA CITY, OKLA. (municipal No. 2) — 254,000

To grade, seed, and drain NW/SE and NE/SW landing strips, each 500 by 3,900 feet; install beacon, boundary, range, and obstruction lights; grade, gravel, and drain parking area; fence entire field; and grade, seed, and drain N/S and E/W landing strips, each 500 by 3,900 feet.

OROVILLE, CALIF. — 50,000

As a nonlabor allocation to W. P. A. to grade field and surface runways.

OXNARD, CALIF. — 71,000

To install beacon, boundary, and range lights; and resurface E/W runway, 100 by 3,280 feet.

PALATKA, FLA. — 117,000

To grade and pave the NE/SW and NW/SE runways to 100 by 3,000 feet; clear approaches and install basic lighting system.

PENDLETON, OREG. — 282,600

To grade and pave E/W runway 150 by 5,300 feet, install drains, fence, lighting facilities; grade and pave NW/SE runway 150 by 5,300 feet, install drains and lighting facilities, and grade and pave west taxiway 75 by 1,700 feet.

PHOENIX, ARIZ. — 207,000

To clear, grade, and fence 260 acres of land; construct N/S paved and marked runway 150 by 4,000 feet; install boundary lights around new portion of airport; construct NW/SE paved runway 150 by 5,000 feet and equip with range lights and install contact lights on present E/W runway.

PITTSFIELD, MAINE — 55,000

As a nonlabor allocation to W. P. A. to construct N/S and E/W landing strips 500 by 3,000 feet and install basic lighting system.

POCATELLO, IDAHO — $100,000

To extend and pave E/W landing strip to 5,600 feet (500 by 1,300 feet), runway pavement 150 by 1,300 feet; widen pavement 50 feet (200 by 5,600 feet); grade, drain, and pave NW/SE landing strip 500 by 4,300 feet (runway pavement 150 by 4,300 feet); pave N/S runway (150 by 4,300 feet); grade and pave taxiways and taxi strips; install drains, cattle guards, contact lights, and controls; and clear and grub site.

PORT ANGELES, WASH. — 12,000

To sponsor a W. P. A. project to grade and pave taxiway 75 by 3,500 feet, concrete apron 100 by 300 feet and install drains.

PORTLAND, MAINE — 265,000

As a nonlabor allocation to W. P. A. to widen and extend the NE/SW and NW/SE landing strips to 500 by 3,500 feet and pave 100-foot runways thereon; and install boundary lights.

PORTLAND, OREG. — 4,000

To daymark runways and taxi strips.

PRESQUE ISLE, MAINE — 175,000

As a nonlabor allocation to W. P. A. to extend the N/E, E/W, and NW/SE landing strips to 500 by 4,500 feet, gravel base to be provided.

PUEBLO, COLO. — 135,000

As a nonlabor allocation to W. P. A. to widen, lengthen, and resurface two runways.

READING, PA. — 172,000

To widen and extend N/S landing strip to 500 by 3,600 feet and pave 100-foot runway thereon; and install drainage and basic lighting system.

RED BANK, N. J. — 537,000

To construct landing strips; N/S 500 by 3,700 feet, NW/SE 500 by 3,300 feet, and widen and extend E/W landing strip to 500 by 4,000 feet; pave 150-foot runways full length on each of the above three landing strips; grade, top soil, and seed NE/SW landing strip 500 by 3,000 feet; and install drainage and basic lighting systems.

RED BLUFF, CALIF. — 114,000

To lengthen and widen N/S landing strip to 500 by 4,000 feet; construct N/S runway 200 by 4,000 feet; and install contact and boundary lights and appurtenant work.

RHODE ISLAND STATE AIRPORT (HILLSGROVE, R. I.) — 172,000

To extend the NE/SW and NW/SE landing strips to 4,000 feet and pave 150-foot runways thereon, and the E/W landing strip to 3,500 feet and pave 150-foot runway thereon; and install additional boundary and contact lights.

ROANOKE, VA. — 85,000

As a nonlabor allocation to W. P. A. to complete present project for constructing N/S and E/W landing strips 500 by 4,000 feet and pave 150-foot runway thereon; and install drainage and basic lighting systems.

ROCHESTER, N. Y. — 79,000

To extend ENE/WSW landing strip to 500 by 4,400 feet and pave 150-foot runway thereon.

ROCK SPRINGS, WYO. — 367,000

To clear, grade, drain, and fence entire field; remove pole line; install a beacon, code beacon, boundary, range, and obstruction lights; and pave E/W runway to 150 by 5,700 feet.

ROSWELL, N. MEX. — $150,000

To grade, drain, and fine grade four landing strips each 500 by 5,200 feet; install beacon, boundary, range and obstruction lights, and control panel; fence field; pave and install contact lights on the following runways; N/S, NW/SE, NE/SW, and E/W runways, each 150 by 4,935 feet; pave taxiways, 75 by 4,200 feet.

ST. AUGUSTINE, FLA. — 60,000

To pave three runways: N/S, E/W, and NE/SW; each 100 by 2,600 feet.

ST. PETERSBURG, FLA. (Pinellas County Airport) — 251,000

To clear, grub, grade, drain, sod, and fence entire landing area; pave three runways: E/W, NW/SE, NE/SW, each 100 by 4,000 feet; pave taxi strips; and install basic lighting system.

SALEM, OREG. — 140,000

To relocate open drainage ditch; remove obstructions, condition field; install oil mat and taxi strips N/S runway 150 by 4,000 feet; and for engineering and contingencies including installation of fences, added lighting, and marking.

SALT LAKE CITY, UTAH (municipal airport) — 75,000

To sponsor W. P. A. project for construction of apron and taxi strip 3,000 by 100 feet.

SALT LAKE CITY, UTAH (municipal No. 2 airport) — 208,375

To construct 500-foot NW/SE landing strip and paved runway 150 by 4,000 feet; construct E/W landing strip 500 by 4,000 feet; construct diversion channel 5 by 22 by 6,350 feet; and install 24-inch tile drainage pipe under runway, 1,420 feet.

SAN ANTONIO, TEX. (municipal No. 2 airport) — 100,000

To clear, grub, grade, drain, and construct four runways 150 by 5,300 feet, construct essential taxi strips, aprons, and loading ramps; and extend lighting system. (W. P. A. states this will provide for a total project value of $1,327,686.)

SANFORD, MAINE — 10,000

To install basic lighting system.

SANTA BARBARA, CALIF. — 533,400

To construct drainage, canal and dike; fill, grade, and install boundary lights for N/W, E/W, and NE/SW landing strips 500 by 4,000 feet; and pave NE/SW runway 150 by 4,000 feet.

SANTA FE, N. MEX. — 314,000

To provide four landing strips as follows: one 500 by 5,200 feet, one 500 by 5,800 feet and two 500 by 6,200 feet; install beacon, boundary, range, and obstruction lights; and pave N/S runway 150 by 5,000 feet, and install contact lights.

SANTA MONICA, CALIF. — 10,270

To install contact, boundary, and range lights on entire field.

SARASOTA-BRADENTON, FLA. (Sarasota-Manatee County Airport) — 50,000

To sponsor W. P. A. project to extend, widen, and pave three runways from 100 by 3,500 feet to 150 by 4,000 feet.

SAVANNAH, GA. (municipal airport) — 86,000

To widen and extend two runways.

SAVANNAH, GA. (municipal No. 2 airport) ---------- $164,000

To clear, grub, drain, and grade new all-way class 3 landing field.

SEATTLE, WASH. ---------- 223,000

To prepare and pave NNW/SSE runway 200 by 5,950 feet, a N/S taxiway 75 by 1,750 feet, and extend NW/SE runway to west; apron constitute a concrete testing apron for bombers, 200 by 600 feet.

SHERIDAN, WYO. ---------- 194,000

To grade, drain, fence, seed and/or sod entire field; install a beacon, code beacon, boundary, range, and obstruction lights; and pave NE/SW runway to 150 by 4,900 feet.

SPARTANBURG, S. C. (municipal airport) ---------- 50,000

To provide nonlabor funds for sponsoring a W. P. A. project to complete grading and paving on N/S runway 150 by 4,000 feet.

SPOKANE, WASH. ---------- 200,000

This allocation requested to be set up in reserve to complete W. P. A. project now operating. Further investigation and study required.

SWEETWATER, TEX. (municipal airport) ---------- 190,000

To provide grading and drainage and fence entire field; install beacon, code beacon, control panel, boundary, range, and obstruction lights; pave N/S runway 150 by 4,500 feet.

SYRACUSE, N. Y. ---------- 106,000

To widen and extend the NW/SE and NE/SW landing strips to 500 by 4,000 feet and pave 100-foot runways thereon, and install drainage and basic lighting systems.

TALLAHASSEE, FLA. ---------- 135,000

To extend and widen NW/SE runway to 150 by 5,000 feet and N/S runway to 150 by 4,507 feet and install additional basic lighting system to cover; install contact lights on both runways.

TAMPA, FLA. ---------- 202,000

To clear, grub, grade, sod, and fence landing area; pave the NE/SW and NW/SE runways each 100 by 3,500 feet; pave taxi strips and install basic lighting system.

THE DALLES, OREG. ---------- 100,000

To construct E/W landing strip with 150- by 4,100-foot paving.

TUCSON, ARIZ. ---------- 158,000

To clear, grade, drain, and fence entire field; construct NW/SE landing strip 500 by 4,000 feet and pave runway 100 by 4,000 feet; construct N/S landing strip 500 by 3,200 feet; construct E/W landing strip 500 by 3,000 feet; construct NE/SW landing strip 500 by 4,100 feet.

TULSA, OKLA. (municipal airport) ---------- 323,000

To grade, drain, and construct NW/SE runway 150 by 4,625 feet and extend taxi strip to NW end of same; widen and extend N/S runway to 150 by 4,236 feet and extend taxi strip to connect with same; and widen and extend NE/SW runway to 150 by 4,120 feet and extend taxi strip to connect with same.

TULSA, OKLA. (municipal No. 2 airport) ---------- 159,000

To grade, seed, and drain NW/SE landing strip 500 by 3,400 feet and NE/SW landing strip 500 by 2,950 feet; grade and seed N/S landing strip 500 by 3,000 feet and E/W landing strip 500 by 2,500 feet; and install beacon, boundary, range, and obstruction lights.

UTICA, N. Y. ---------- $169,000

As a nonlabor allocation to W. P. A. to pave the NW/SE and the WNW/ESE runways to 150 by 3,500 feet and construct taxiways and apron.

VERO BEACH, FLA. ---------- 264,000

To grade, drain, sod, and clear approaches for three landing strips, NW/SE and E/W, 500 by 4,000 feet, and N/S 500 by 4,200 feet; pave three runways; NW/SE 150 by 3,800 feet, N/S and E/W 150 by 4,000 feet; and install basic lighting system.

WACO, TEX. (muncipal airport) ---------- 184,000

To provide necessary grading, drainage, and seeding for landing strips as follows: Two 500 by 4,300 feet; one 500 by 4,700 feet; one 500 by 3,400 feet; pave N/S runway 150 by 4,130 feet; install boundary, range, obstruction, contact lights, and beacon; and fence entire field.

WACO, TEX. (proposed new airport) ---------- 118,000

To provide the necessary clearing, grading, drainage, and seeding for landing strips as follows: One 500 by 4,800 feet; one 500 by 4,900 feet; one 500 by 5,000 feet; one 500 by 6,200 feet; install beacon, boundary, range, and obstruction lights and a control panel; and fence entire field.

WALLA WALLA, WASH. ---------- 170,000

To grade and pave NE/SW runway 150 by 4,000 feet and parallel taxiway 75 by 4,000 feet; to grade and pave N/S runway 150 by 3,500 feet and parallel taxiway 75 by 2,900 feet; install drainage and lighting system. This work is contingent upon the city's relocating power and telephone lines.

WATERVILLE, MAINE. ---------- 157,000

As a nonlabor allocation to W. P. A. to widen and extend the NE/SW runway to 150 by 2,750 feet; widen and extend the E/W runway to 150 by 3,250 feet, widen and extend the NW/SE runway to 150 by 1,900 feet; install drainage and basic lighting facilities.

WENATCHEE, WASH. ---------- 300,000

To grade and pave E/W runway 150 by 4,500 feet; and install drainage system.

WESTFIELD, MASS. ---------- 94,000

As a nonlabor allocation to W. P. A. to extend NE/SW landing strip to 500 by 3,800 feet and pave runway thereon 100 feet in width; and to extend E/W landing strip to 500 by 3,200 feet and pave runway thereon 100 feet in width.

WEST LEBANON, N. H. ---------- 335,000

To construct N/S landing strip 500 by 4,000 feet and pave 100-foot runway thereon and a NE/SW landing strip 500 by 3,500 feet and pave 100-foot runway thereon; install basic lighting system.

WEST PALM BEACH, FLA. (municipal airport) ---------- 64,000

To grade, drain, and sod N/S landing strip 500 by 4,400 feet; and pave same 150 by 4,000 feet; resurface E/W, NW/SE, and NE/SW runways each 100 by 3,000 feet.

WEST PALM BEACH, FLA. (municipal No. 2 airport) ---------- 194,000

To clear, grub, grade, drain, and sod three landing strips each 600 by 3,500 feet, and pave same 100 by 3,000 feet; pave taxi strips and install basic lighting system.

WHITE PLAINS, N. Y. (Westchester County Airport) ---------- $500,000

To construct a N/S landing strip 500 by 3,500 feet and pave a 100-foot runway thereon.

WASHINGTON, D. C. (auxiliary airport, Beltsville, Md.) ---------- 125,000

As a nonlabor contribution to W. P. A. to grade, drain, and provide two runways. Class 2.

WILKES-BARRE, PA. ---------- 180,000

As a nonlabor allocation to W. P. A. to construct NW/SE and NE/SW landing strips 500 by 3,500 feet.

WILLIAMSPORT, PA. ---------- 90,000

As a nonlabor allocation to W. P. A. to construct NW/SE landing strip 500 by 4,000 feet and pave 100-foot runway thereon; install drainage and basic lighting systems.

WILLOWS, CALIF. ---------- 165,000

To grade, drain and fence entire field; construct N/S landing strip 500 by 4,000 feet and pave a 150-foot runway thereon; install boundary and range lights and code beacon.

WINSLOW, ARIZ. ---------- 303,628

To clear, grade and drain as shown on plans; fine grade and construct WNW/ESE runway 150 by 2,800 feet; fine grade and construct NNE/SSW runway 150 by 2,100 feet; and reconstruct and install additional field lighting equipment.

WORCESTER, MASS. ---------- 65,000

As a nonlabor allocation to W. P. A. to extend and pave NW/SE runway to 100 by 3,500 feet and grade landing strip to 500 by 3,500 feet; install basic lighting system and contact lights for two runways.

YAKIMA, WASH. ---------- 99,000

To grade and pave NE/SW runway 150 by 4,000 feet and concrete turnarounds 105 by 145 feet; pave 48,424 square yards of taxiways; and install drainage and lighting systems.

YOUNGSTOWN, OHIO. ---------- 29,992

To install lighting system.

YUBA-MARYSVILLE, CALIF. (Sutter County airport) ---------- 238,000

To clear, grub, grade, drain and fence entire field; construct NW/SE landing strip 500 by 5,000 feet and pave a 150-foot runway thereon; construct taxi strips; install boundary, range, obstruction, and contact lights, and a control panel; and erect a rotating beacon tower and code beacon.

YUMA, ARIZ. ---------- 151,050

To grade and prepare for 3 landing strips; fence entire field; install boundary, range, and obstruction lights; erect rotating beacon, tower, and code beacon, and install panel board. Pave E/W runway.

ALASKA ---------- $3,000,000

Allocations as listed below are requested for the following locations in Alaska to provide the necessary clearing and grading for landing strips:

Project	*Amount*
Big Delta	$500,000
Boundary	500,000
Cordova	400,000
Juneau	500,000
Kotzebue	100,000
Nome	500,000
Ruby	500,000

TERRITORY OF HAWAII..... $1,440,000

Allocations as listed below are requested to provide needed improvements to existing airports at:

Project	*Amount*
Hilo, Hawaii	$359,000
John Rodgers, Oahu (John Rodgers Airport, Honolulu)	101,000
Maui, Maui	517,000
Molokai, Molokai	232,000
Upolo Point, Hawaii	231,000

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Publications

(Continued from page 6)

United States of America and Argentina. Price 5 cents. Classification number S 9.8:175.

NAVAL AVIATION PERSONNEL ACT OF 1940; An act increasing the number of naval aviators in the line of the Regular Navy and Marine Corps, and for other purposes. Approved August 27, 1940 (76th Cong., Public Law 775). Price 5 cents. Classification number S 7.5/1:76/775.

NATIONAL BUREAU OF STANDARDS, RESEARCH PAPER 1318; an automatic weather station, p. 133–148, illustrated. Price 10 cents. Classification number C 13.22/a:1318.

NATIONAL BUREAU OF STANDARDS, RESEARCH PAPER 1316; corrosion of metals used in aircraft, p. 75–82. Price 10 cents. Classification number C 13.22/a:1316.

NAVY DEPARTMENT, AIRCRAFT NAVIGATION MANUAL; prepared at Pensacola Ground School and published by the U. S. Navy Hydrographic Office, 272 pages, illustrated, cloth bound. Price $1.00. Classification number N 6.8:216/940.

WAR DEPARTMENT, TECHNICAL MANUAL No. 1–407; aircraft induction, fuel and oil systems. Gives information relating to fuels, lubricants, oiling systems, fuel systems, carburetion systems, fuel injection systems, and supercharger systems. 96 pages, illustrated. Price 20 cents. Classification number W 1.35:1–407.

WAR DEPARTMENT, TECHNICAL MANUAL No. 1–408; aircraft engine operation and test. Gives information relating to control systems, operation, testing, troubles, and storage and shipment. 62 pages, illustrated. Price 10 cents. Classification number W 1.35:1–408.

WAR DEPARTMENT, TECHNICAL MANUAL No. 1–445; link trainer operation and training. 122 pages, illustrated. Price 20 cents. Classification number W 1.35:1–445.

STATE DEPARTMENT, EXECUTIVE AGREEMENT SERIES 178; naval aviation mission, agreement between the United States and Peru. 12 pages. Price 5 cents. Classification number S 9.8:178.

When ordering these publications, send remittance by postal money order, express order, coupons, or check to the Superintendent of Documents, Government Printing Office, Washington, D. C. Always give title, issuing office, or classification number when listed.

C. A. A. Publications

Listed below are publications of the Civil Aeronautics Administration. There is a nominal charge for some of the printed publications. The sales price, if any, of each publication is given in the list. The publications for which there is a charge must be obtained from the Superintendent of Documents, United States Government Printing Office, Washington, D. C. Others may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

ANNUAL REPORT; first annual report of the Civil Aeronautics Authority, 1939, 25 cents per copy.

Civil Aeronautics Bulletins

No. 3. AIRCRAFT ACCIDENTS AND CASUALTIES; Sept. 1, 1938.

No. 4. STATE AERONAUTICAL LEGISLATION DIGEST AND UNIFORM STATE LAWS; Oct. 1, 1939. 15 cents per copy.

No. 5. FLIGHT INSTRUCTOR'S MANUAL; September 1940. 30 cents per copy.
The revised bulletin is a handbook and study outline intended to be of use solely to flight instructors. Also included in it is helpful material on the proper method of instruction in such ground-school subjects as are covered by the flight instructor. It should be noted that the material of interest or of value to a student pilot, formerly included in Bulletin No. 5, has been incorporated in the Civil Pilot Training Manual, Bulletin No. 23.

No. 11. DIRECTORY OF AIRPORTS AND SEAPLANE BASES; Sept. 1, 1939. Issued in seven parts, each part covering the States in the corresponding C. A. A. field region. 10 cents per part.

No. 12. AIR MARKING; Oct. 1, 1938.

No. 22. DIGEST OF REGULATIONS FOR PILOTS; 3d edition, September 1940. 20 cents per copy.

No. 23. CIVIL PILOT TRAINING MANUAL; September 1940. 50 cents per copy.
In substance this bulletin takes the place of Bulletin No. 21, Primary Ground Study Manual, and includes, in addition to much of the material formerly covered in that bulletin, the text for both private and restricted commercial flight courses which was covered in Bulletin No. 5. It also covers the preliminary ground course except "Civil Air Regulations," "Navigation," and "Meteorology."

No. 24. PRACTICAL AIR NAVIGATION; September 1940. $1.00 per copy.
In the Civilian Pilot Training Course this bulletin supplants Special Publication 197, issued by the Coast and Geodetic Survey. It covers information on navigation of interest to pilots and is similar to the previous edition of the Coast and Geodetic Survey Publication except that the chapter on meteorology has been omitted.

No. 25. METEOROLOGY FOR PILOTS; September 1940. 75 cents per copy.
The material in this publication formerly was covered briefly in Special Publication 197. It now presents, in an easily understandable form, the complete meteorological information necessary for pilots.

No. 26. AERODYNAMICS FOR PILOTS; September 1940. 30 cents per copy.
This bulletin is comprehensive in its treatment of aerodynamics, but has been written with a view to presenting in the simplest manner possible that information primarily of value to pilots.

No. 27. PILOTS' AIRPLANE MANUAL; September 1940. 30 cents per copy.
This Manual consists of information on the construction and maintenance of aircraft and is written with a view to presenting information of value to pilots as differentiated from the mechanics standpoint.

No. 28. PILOTS' POWERPLANT MANUAL; September 1940. 75 cents per copy.
This publication is believed to be one of the most comprehensive manuals ever compiled on the subject of aircraft engines and accessories, yet it is presented in the simplest manner possible.

No. 29. PILOTS' RADIO MANUAL; September 1940. (Price not yet determined.)
This bulletin comprises information of interest and value to pilots on the use of aircraft radio and aeronautical radio procedures.

No. 30. GROUND INSTRUCTOR'S MANUAL; September 1940. 15 cents per copy.
Designed as a guide for ground instructors, this bulletin contains an outline of the grounds-school course and helpful material on the proper method of instruction in ground-school subjects.

NOTE.—Bulletins No. 26, 27, 28, and 29 were prepared for use in the *advanced courses* of the Civilian Pilot Training Program.

STUDENT PILOT RATING BOOK; designed for use in conjunction with the Administration's controlled private flying course. 25 cents per copy.

Pamphlets

STATISTICAL STUDY OF REGISTERED CIVIL AIRCRAFT; as of January 1, 1939. July 1939.

THE USE OF THE AIRWAY RADIO RANGE AND OTHER RADIO AIDS; October 1939.

AERONAUTICAL LIGHTS AND OBSTRUCTION MARKING MANUAL; December 1939.

Development Reports

No. 1. The Radiotelemeter and Its Importance to Aviation, September 1938.

No. 2. An Ultra-High Frequency Aircraft Receiver. September 1938.

No. 3. Aeronautical Light Nomenclature. October 1938.

No. 4. The Alfaro Engine. January 1939.

No. 5. Development and Use of the Airport Orientator. December 1938.

No. 6. Survey of State Airport Zoning Legislation. June 1939.

No. 7. Tests with Ultra-High Frequency Radio Transmitting and Receiving Equipment for Itinerant Aircraft Communication. July 1939.

No. 8. Report on Circuit Design for Low-Frequency Radio Ranges. November 1939.

No. 9. Preliminary Investigation of the Effects of Wave Polarization and Site Determination With the Portable Ultra-High-Frequency Visual Radio Range. February 1940.

Miscellaneous

AERONAUTICAL TRADE DIRECTORIES. Lists of firms engaged in aeronautical activities. (Please request the list of companies engaged in the specific activity or maunfacturing the specific commodity in which you are interested.)

LISTS OF AERONAUTICS PUBLICATIONS: Publications on various aeronautical subjects. (Please request list covering specific subject in which you are interested.)

INDEX TO AERONAUTICAL NAVIGATION CHARTS: Aeronautical Charts issued by the Coast and Geodetic Survey. Notices of new or revised editions are carried each month in the CIVIL AERONAUTICS JOURNAL.

Publications of the Former Bureau of Air Commerce

The Administration has available for distribution a limited number of publications issued by the former Bureau of Air Commerce. These publications are as follows:

Aeronautics Bulletin

No. 27. AERONAUTIC RADIO; July 1, 1937.

Safety and Planning Reports

No. 1. Report on the Status of Instrument Landing Systems. October 1937.

No. 2. Report on 125 Megacycle Airport Traffic Control Tests at Indianapolis. January 1938.

No. 3. Preliminary Report on a Four-Course Ultra-High-Frequency Radio Range. January 1938.

No. 4. Geographical Separation of Radio Range Stations Operating on the Same or Adjacent Frequencies in the 200–400 KC Band. January 1938.

No. 5. Report on the Development of Fan-Type Ultra-High-Frequency Radio Markers as a Traffic Control and Let-Down Aid. January 1938.

No. 6. The Development of an Airways Ultra-High-Frequency Communications Circuit. February 1938.

No. 7. Development of a Safety and Planning Program. April 1938.

No. 8. Report on Cone of Silence Tests at Knoxville, Tenn. April 1938.

No. 9. Directory of Airport Managers or Administrative Officials. June 1939 (Replaces Report No. 9 dated February 1938.)

No. 10. Analysis of the Aviation Medicine Situation and Recommendations for a Bureau Program. April 1938.

No. 11. The Hindenburg Accident. August 1938.

No. 12. Study of Safety of Aircraft Having Single Dual-Geared Power Plant. April 1938.

No. 13. The Effects of Oxygen Deprivation (High Altitude) on the Human Organism. May 1938.

No. 14. The Development of an Improved Ultra-High-Frequency Radio Fan Marker. July 1938.

No. 15. Tests Conducted to Determine Safe Methods of Dumping Fuel from Airplanes in Flight. July 1938.
No. 16. The Development, Adjustment, and Application of the Z-Marker. July 1938.
No. 17. Tests of the First Manufactured Fan Marker. July 1938.

Other Pertinent Publications

The Civil Aeronautics Act of 1938; The Legislation which Created the Civil Aeronautics Authority (75th Cong. Public Law 706). 10 cents per copy.

Authority Reports to Congress

AIRPORT SURVEY—76th Congress, House Document 245. Recommendations as to the desirability of Federal participation in the construction, improvement, development, operation, and maintenance of a national system of airports. 75 cents per copy.
FOREIGN RATE STUDY—76th Congress, House Document 478. Investigation as to what extent, if any, the Federal Government should further regulate the rates, fares, and charges of air carriers engaged in foreign air transportation, and the classifications, rules, regulations, and practices affecting such rates, fares, or charges. 15 cents per copy.

Army-Navy-Commerce Reports

ANC-1 (1), SPANWISE AIR LOAD DISTRIBUTION; April 1938. 60 cents per copy.
ANC-5, STRENGTH OF AIRCRAFT ELEMENTS; October, 1940, revised edition. 35 cents per copy.

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1940 in Review

(*Continued from page 3*)

For the transmission of weather information, there were in operation on January 1, 1941, some 28,050 miles of teletype weather-reporting circuits. Last July 1 this total was 27,068 miles, and by next July 1, it is expected to reach 55,456 miles. The teletype traffic-control mileage now is 12,260 miles against 11,714 miles on July 1, 1940, and an estimated 18,255 miles by July 1, 1941.

Technical Development

The Administration's technical development program was advanced materially during 1940. The Technical Development Division, which is the division charged with the conduct of this program, was active in all of the many fields of development bearing on design, operation, and navigation of aircraft.

A continuous effort to improve existing facilities and extend their utility has been supplemented by development effort expended on many new types of facilities which have shown preliminary promise justifying continued development.

As an example of the first type of project, radio ranges, and communications facilities have been developed to operate in the ultra-high-frequency domain instead of in the low- and medium-frequency portions of the radio spectrum. These have been subjected to proving tests by selected pilot groups and installations are proceeding which will permit service testing by both civil and military pilots during their routine operations.

Exemplifying the second type of project are various types of radio guidance facilities proposed as alternatives to the present type, either because they give promise of increased utility, or of freedom from various and serious defects in present types of ranges. Ground-type direction finders, intended as a secondary facility supplementing the present system, have been and are being developed and this development shortly will be offered for review.

Work has continued on the development of instrument landing equipment. The development of one system, known as the R. T. C. A. system has progressed to an extent such as to allow the Administration to contract for installations of the system at eight key airports. A second system, known as the Metcalf system and utilizing extremely short radio waves, is being developed so satisfactorily that it is expected that it will be ready for service tests sometime in the spring.

The tremendous growth of civil aeronautics and air commerce has produced many problems in connection with air-traffic control. Anticipating that these problems will become more serious with increasing traffic density, the assistance of the Technical Development Division has been invoked in developing ground and aircraft apparatus which will relieve the pressure on present equipment and adequately satisfy the demands which the future undoubtedly will make.

Closely related to the development of air-navigation facilities is the development of charts for the users of these facilities. As the number of facilities increases and as the dependence of pilots on them increases, their inclusion in existing charts becomes more and more impractical. A map showing both contact- and instrument-flight information becomes confusing and worthless for either type of flying. Consequently, the development of simplified charts for use in instrument navigation, on which only radio aids accurately depicted and easily interpreted are shown, is imperative and becomes more so as the amount of bad-weather flying increases. The Technical Development Division, in cooperation with the map- and chart-making agencies of the Federal Government, has made rapid strides in the development of these special charts during the year.

A great deal of work has been done with a view of alleviating the hazards due to fire in the air. Powerplant nacelle fire tests have continued throughout the year and, although the test program still is far from completed, the results and information obtained already are influencing the design of air carrier aircraft. This, it is expected, will result in increased safety.

A program which is providing the instrumentation necessary to permit interested and cooperating groups to study destructive flutter in aircraft components has proceeded far towards accomplishment. Various analytical and recording apparatuses have been designed and are being delivered for application to aircraft. Others are in process of design or fabrication and the industry generally presently will be able to apply powerful analytical methods and substantiate empirical design data.

Work has continued on the correlation of aircraft performance with airport size. This work is designed to prevent the construction of inadequate airports of restricted value.

Airport soil stabilization has received a great deal of attention and the Technical Development Division's experimental program in this field has yielded important information which probably will save and safeguard millions of dollars in aircraft construction and investment. Closely related to this is the study of leads applied to airport surfaces and paving. This matter too, is being investigated thoroughly.

Existing airport and seaplane landing area lighting and marking equipment has been improved and many new developments in this field are being prosecuted. This is especially true of seaplane landing area marking necessitated by the growth of transoceanic flying.

Other airport and seaplane landing area equipment, such as wind-direction indicators and mooring buoys, has received continuous attention.

The closest relationship is being maintained between the Technical Development Division, the industry, and the several governmental agencies to the end that the Administration's technical development program produces satisfactory answers to present needs and that its future projects are formulated in accordance with anticipated needs.

Accident Investigation and Prevention

Aircraft accident investigation and prevention during the year was under the Air Safety Board until the Reorganization transferred its duties to the new Safety Bureau of the Civil Aeronautics Board. The Air Safety Board studied and reported on 1,088 accidents and conducted 580 investigations. The Bureau, after its inception July 1, conducted 508 investigations. Nineteen public hearings on aircraft accidents were held during the year, five of them for air-carriers.

Shortly before the end of the year the analysis section of the Bureau added personnel to enable it to pursue special safety studies. Surveys made so far have dealt with collisions in non-air-carrier flying, propeller feathering incidents in air-carrier operations, propeller failures in non-air-carrier operations, and accidents in which student pilots were carrying passengers.

In full cooperation with the work of the Administrator of Civil Aeronautics, the Safety Rules and Education Section, established under the Board on July 1, has begun a widespread effort to make pilots, mechanics, instructors, and airport operators safety conscious. A large number of releases pointing out the fatal mistakes most often made in private flying, and stating ways in which they can be avoided, have been circulated.

CIVIL AERONAUTICS BOARD

OFFICIAL ACTIONS

Abstracts of Opinions, Orders, and Regulations

FOR THE PERIOD DECEMBER 1–15, 1940

ORDERS

ORDER NO. 749: *Pan American Airways certificate transferred to Uraba, Medellin, and Central Airways.*

The Board on November 4 approved the transfer to Uraba, Medellin, and Central Airways, Inc., of that portion of the certificate of public convenience and necessity, as amended, issued to Pan American Airways, Inc., authorizing air transportation between Cristobal, C. Z., and Turbo, Colombia; authorized issuance to Pan American Airways, Inc., of a certificate of public convenience and necessity, in all respects similar to that previously issued except that it shall not contain the above authority; and denied the application of Uraba, Medellin, and Central Airways, Inc., for certificates of public convenience and necessity under section 401 (e) (1) and 401 (d) (1) of the Civil Aeronautics Act. (Opinion and order—docket 421).

ORDER NO. 750: *Denied application of Inland Air Lines for an amendment to its certificate for route No. 35.*

The Board on December 2 denied application of Inland Air Lines, Inc., for an amendment to its certificate of public convenience and necessity for route No. 35 so as to authorize air transportation to and from Alliance, Nebr. (Order accompanied by opinion—Docket 438.)

ORDER NO. 751: *Directed George Tregre to show cause why his student pilot certificate should not be revoked or suspended.*

The Board on December 2 directed George Tregre, New Orleans, La., to appear before an examiner of the Board and show cause why his student pilot certificate No. S–198323 should not be revoked or suspended for piloting an aircraft on a civil airway while not possessed of a pilot certificate, and other violations of the Civil Air Regulations.

ORDER NO. 752: *Waived application of certain provisions of Executive Order No. 8251 pertaining to operations of TACA, S. A.*

The Board on December 2 waived the application of certain provisions of Executive Order No. 8251 of September 12, 1939, as amended by Executive Order No. 8271 of October 16, 1939, to the operations of TACA, S. A., in regularly scheduled services into, within, or from the Canal Zone.

ORDER NO. 753: *Tri-State temporarily exempted from certain provisions of title IV of the Civil Aeronautics Act and from condition set forth in Board's order of July 31.*

The Board on December 5 temporarily exempted Tri-State Aviation Corp. from certain provisions of title IV of the Civil Aeronautics Act and from the condition set forth in the Board's order of July 31, 1940 (Order No. 608) requiring Tri-State Aviation Corporation to renew operations under its certificate with 120 days from the date of issuance of said certificate.

ORDER NO. 754: *Student pilot certificate of Harry Garber revoked.*

The Board on December 6 revoked student pilot certificate No. S–60741, held by Harry Garber, Wisconsin Rapids, Wis., for piloting an aircraft carrying a passenger other than a certificated instructor and other violations of the Civil Air Regulations.

ORDER NO. 755: *Denied petition of Chamber of Commerce of Kansas City permission to intervene in applications of various airlines.*

The Board on December 6 denied petition of the Chamber of Commerce of Kansas City, Mo., for leave to intervene in the applications of Continental Air Lines, Inc., United Air Lines Transport Corporation, Braniff Airways, Inc., and Transcontinental & Western Air, Inc., for a certificate of public convenience and necessity involving service between Denver and Kansas City, via Salina and Topeka.

ORDER NO. 756: *Chicago & Southern granted permission to withdraw its application for certificates authorizing air transportation between St. Louis, Mo., and Detroit, Mich.*

The Board on December 6 granted request of Chicago & Southern Air Lines, Inc., for permission to withdraw its application for a certificate of public convenience and necessity authorizing air transportation between St. Louis, Mo., and Detroit, Mich.

ORDER NO. 757: *Granted in part applications Chicago and Southern and Eastern Air Lines for certificates of convenience and necessity*

The Board on December 6 granted in part application of Chicago and Southern Air Lines, Inc., by the issuance of a certificate of public convenience and necessity authorizing air transportation with respect to persons, property, and mail between the terminal point Houston, Tex., the intermediate points Shreveport, La., and Pine Bluff, Ark., and the terminal point Memphis, Tenn.; and granted in part the application of Eastern Air Lines, Inc., by amending the certificate of public convenience and necessity for route No. 47 so as to authorize that carrier to engage in air transportation with respect to persons, property, and mail between Evansville, Ind., and Louisville, Ky.; and denied applications in other respects. (Order accompanied by opinion—Dockets 1–401–B–1, 4–401–B–1, 9–401–B–3.)

ORDER No. 758: *Mayflower Airlines authorized to suspend temporarily all service required by its certificate.*

The Board on December 10 authorized Mayflower Airlines, Inc., to suspend, during a period which shall continue to and including March 31, 1941, and no longer, all service between the terminal point Boston, Mass., the intermediate points Provincetown, Mass., Hyannis, Mass., and Oak Bluff, Mass., and the terminal point Nantucket, Mass., required by the certificate of public convenience and necessity issued to the carrier on July 31, 1940.

ORDER No. 759: *American Airlines granted permission to intervene in application of United.*

The Board on December 10 granted American Airlines, Inc., permission to intervene in the application of United Air Lines Transport Corporation for a certificate of public convenience and necessity authorizing air transportation between Washington, D. C., and Toledo, Ohio.

ORDER No. 760: *Northwest Airlines granted permission to intervene in application of United.*

The Board on December 10 granted Northwest Airlines, Inc., permission to intervene in the application of United Airlines Transport Corporation for a certificate of public convenience and necessity authorizing air transportation between Washington, D. C., and Toledo, Ohio.

ORDER No. 761: *Penn-Central granted permission to intervene in application of United.*

The Board on December 10 granted Pennsylvania-Central Airlines permission to intervene in the application of United Air lines Transport Corporation for a certificate of public convenience and necessity authorizing air transportation between Washington, D. C., and Toledo, Ohio.

ORDER No. 762: *Solo pilot certificate of Robert L. Attkisson revoked.*

The Board on December 13 revoked solo pilot certificate No. 71110, held by Robert L. Attkisson, Sturgis, Mich., for piloting an aircraft over a congested area at an altitude of approximately 300 feet, and other violations of the Civil Air Regulations.

ORDER No. 763: *Private pilot certificate of Earle Toole revoked.*

The Board on December 13 revoked private pilot certificate No. 73721, held by Earle Toole, Gainesville, Fla., for giving flying instruction for hire to various student pilots, although he did not hold an instructor rating, and other violations of the Civil Air Regulations.

Notice

The CIVIL AERONAUTICS JOURNAL carries in this section an abstract of all orders, economic regulations, and rules, and a syllabus of all opinions issued by the Civil Aeronautics Board during the half month ending 2 weeks prior to the date of publication.

ECONOMIC OPINIONS

All opinions of the Board in economic proceedings are printed individually. They may be obtained on a subscription basis. These are "advance sheets" of the material which later will make up bound volumes of CIVIL AERONAUTICS BOARD REPORTS.

The subscription price for each volume of advance sheets of opinions is $1. Remittance should be made to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Such subscriptions are governed by the quantity of pages rather than by specific periods of time. Current subscriptions include all opinions issued since June 30, 1940, and will continue until the consecutive pagination reaches approximately 800.

NOTE.—Advance sheets of economic opinions also may be purchased individually. As each opinion becomes available in printed forms, the title of the case, docket number, order number, date, and price will be listed here. All orders must be sent to the Superintendent of Documents.

Opinions in cases of suspension, revocation, or denial of airman certificates are available in mimeograph form only. Verbatim copies of these may be obtained by addressing a request for each individual order and opinion desired to the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

AMENDMENTS TO REGULATIONS

The full text of all amendments to the Civil Air Regulations, except for exceedingly long ones which may be abstracted, also is carried in this section.

On the back cover of each issue appears a table showing the status of the Civil Air Regulations and the effective amendments thereto. Full instrutions for obtaining parts and amendments accompany the table.

ORDER No. 764: *Denied application of Pan American for exemption from certain provisions of the Civil Aeronautics Act.*

The Board on December 13 denied the application of Pan American Airways Co. for an exemption from the provisions of sections 401 (a) and 401 (k) of the Civil Aeronautics Act of 1938, to permit routing of west-bound flights from Lisbon, Portugal, to New York, N. Y., via Bulama, Portuguese Guinea; Port of Spain, Trinidad; and San Juan, Puerto Rico, and the omission of Horta, the Azores, as a scheduled stop on east-bound flights pending a decision in the matter of the application of said company for an amendment to its certificate of public convenience and necessity.

ORDER No. 765: *Determined rate of compensation to be paid Mid-Continent Airlines, Inc., for transportation of mail over Route No. 48.*

The Board on December 13 determined the fair and reasonable rate of compensation to be paid Mid-Continent Airlines, Inc., for the transportation of mail by aircraft over Route No. 48 (Opinion and order—Docket 451).

REGULATIONS

REGULATION No. 128: *The Board on December 13 adopted Amendment No. 83 of the Civil Air Regulations, entitled "Duration-Endorsement of Student Pilot Certificates." The amendment, making changes in one section of Part 20 of the CAR, follows:*

Effective December 13, 1940, section 20.33 of the Civil Air Regulations is amended by striking the phrase "or, in case of a student pilot certificate, a medical examiner" and the phrase ", or, in case of a student pilot certificate, an authorized inspector or medical examiner of the Administrator,".

REGULATION No. 129: *The Board on December 13 adopted Amendment No. 84 of the Civil Air Regulations, entitled "Revising Qualifications for and the Rules Governing Repair Stations." The amendment, making changes in three sections of Part 52 of the CAR and adding a new section, follows:*

Effective February 11, 1941, Part 52, as amended, of the Civil Air Regulations is amended as follows:

(1) By amending section 52.1 to read as follows:

"*52.1 Repair station ratings.*[1] Repair station ratings are as follows:

(a) Aircraft of composite construction;
(b) Aircraft of all metal construction;
(c) Aircraft engines;
(d) Aircraft metal propellers and metal propeller hubs;

[1] Manual No. 52 issued by the Administrator of Civil Aeronautics sets forth in detail various types of work which he has interpreted as within the scope of repair stations rated according to sec. 52.1. It also carries lists of equipment facilities and material which the Administrator has approved as adequate under sec. 52.25 for various types of rated repair stations. This manual may be secured by application to the Correspondence Section, Civil Aeronautics Administration, Washington, D. C.

(e) Aircraft wood propellers and their metal propeller hubs;

(f) Aircraft instruments;

(2) By amending section 52.23 to read as follows:

"*52.23 Stock.* Applicant shall have a stockroom which provides for the proper storage and segregation of materials."

(3) By amending section 52.25 to read as follows:

"*52.25 Other requirements.* Applicant shall have such equipment, facilities and material as are necessary for the competent and efficient performance of the type of work for which a rating is sought." [1]

(4) By the addition of a new section, section 52.43, to read as follows:

"*52.43 Reporting defects or unairworthy conditions.* A report of all recurring or serious defects, or other unairworthy conditions of parts of aircraft, aircraft engines, propellers, or appliances shall be made upon the applicable forms prescribed and furnished by the Administrator: *Provided*, That if the repair station is operated by a certificated air carrier and maintains repair base records, such records may be supplied in lieu of the reports required by this section."

REGULATION No. 131: *The Board on December 13 adopted Amendment No. 86 of the Civil Air Regulations, entitled "Redesignation of Certain Radio Fixes and Airway Traffic Control Areas." The amendment, making changes in two Sections of part 60 follows:*

Effective December 13, 1940, part 60 of the Civil Air Regulations is amended as follows:

1. By amending section 60.23226 to read as follows:

"*60.23226 Red civil airway No. 27. (Cincinnati, Ohio to Detroit Mich.)* Cincinnati, Ohio, radio range station; the intersection of the center lines of the on-course signal of the northwest leg of the Cincinnati, Ohio, radio range and the southwest leg of the Dayton, Ohio, radio range; Dayton, Ohio, radio range station; Toledo, Ohio, radio range station; the intersection of the center lines of the on-course signals of the north leg of the Toledo, Ohio, radio range and the south leg of the Detroit, Mich. (Wayne County Airport), radio range; Detroit Mich. (Wayne County Airport), radio range station."

2. By amending section 60.24226 to read as follows:

"*60.24226 Red civil airway No. 27 airway traffic control areas (Cincinnati, Ohio, to Detroit, Mich.).* All of red civil airway No. 27."

REGULATION No. 130: *The Board on December 13 adopted Amendment No. 85 of the Civil Air Regulations, adding a new Part 16, entitled "Providing for the Type Certification of Aircraft Radio Equipment," and making changes in five sections of Part 40 and three sections of Part 04. The full text of the amendment follows:*

Effective February 13, 1941, the Civil Air Regulations are amended as follows:

1. By adding a new Part to read as follows:

"PART 16 AIRCRAFT RADIO EQUIPMENT AIRWORTHINESS [1]

"General:
16.10 Scope
16.11 Deviation
16.12 Waiver

"Technical data:
16.20 General
16.21 Drawings
16.22 Drawing list
16.23 Parts list

"Characteristics:
16.30 Design and tests

"Inspections and tests:
16.40 General
16.41 Facilities
16.42 Report

"Regulations:
16.50 Identification
16.51 Modification
16.52 List changes

"GENERAL

"*16.10 Scope.* Aircraft radio equipment required by the Civil Air Regulations to be type certificated and installed in certificated aircraft is eligible for a type certificate upon meeting the requirements hereinafter prescribed.

"*16.11 Deviation.* New types, or new types of construction, of aircraft radio equipment which make the tests prescribed by these regulations inapplicable may be subjected to such other tests as the Administrator may deem necessary to insure safe operation.

"*16.12 Waiver.* The tests prescribed herein may be waived whenever, in the opinion of the Administrator, a particular part of aircraft radio equipment is so designed or constructed that such tests are not necessary to insure airworthiness.

"TECHNICAL DATA

"*16.20 General.* To be eligible for a type certificate for aircraft radio equipment, an applicant must submit the following technical data:

"*16.21 Drawings.* One set of drawings in blue print or equivalent form folded to approximately 9 by 12 inches containing the manufacturer's designation of the aircraft radio equipment and all details of design, construction, assembly, and materials used which are necessary for the reproduction of such aircraft radio equipment: *Provided*, That adequate photographs may be substituted for such drawings if such photographs are suitably marked to indicate the details required herein.

"*16.22 Drawing list.* A drawing list setting forth in numerical order or by other suitable classification, the title and number or date of each drawing submitted under section 16.21.

"*16.23 Parts list.* A list specifying each component part of the aircraft radio equipment submitted to the Administrator for certification. The list shall indicate the physical or circuit location of each item and the type or model designation assigned to such item by the manufacturer.

"CHARACTERISTICS

"*16.30 Design and tests.* To be eligible for type certification, aircraft radio equipment must be so designed and constructed that it will satisfactorily perform the function or functions for which it is intended to be used in aircraft under all flight conditions which may be met in regular service and must:

"(a) Be free from hazard both in itself and in its method of operation;

"(b) Be constructed of suitable and dependable materials;

"(c) Satisfactorily pass a visual inspection of the construction, lay-out, and electrical arrangement of all components of the particular aircraft radio equipment and such electrical, humidity, temperature, pressure, vibration, drop, and other tests as the Administrator may prescribe.

"INSPECTIONS AND TESTS

"*16.40 General.* The prescribed inspections and tests shall be conducted by the applicant under the supervision of representatives of the Administrator at a designated time and place and in such manner and under such conditions as they may deem necessary.

"*16.41 Facilities.* All engineering, technical, and physical facilities which may be necessary for the conduct of all of the prescribed inspections and tests shall be provided by the applicant.

"*16.42 Report.* The applicant shall submit in duplicate a written report of the results of the prescribed inspections and tests which shall be in such detail as the Administrator may require.

"REGULATIONS

"*16.50 Identification.* Type certificated aircraft radio equipment shall be plainly and suitably marked with at least the following information:

"(a) Name and address of manufacturer.

"(b) Manufacturer's type or model designation.

"(c) Weight to the nearest pound and fraction thereof.

"(d) Serial number or date of manufacture.

"(e) Type certificate number.

"*16.51 Modification.* No change shall be made in the approved specifications under which type certificated aircraft radio equipment is manufactured prior to the approval of such change by the Administrator.

"*16.52 List changes.* The holder of a type certificate for aircraft radio equipment shall keep all lists furnished the Administrator current by submitting revised lists containing all changes made subsequent to original certification."

2. By amending section 40.235 to read as follows:

"*40.235 Radio equipment.* Applicant shall show that each aircraft is equipped with a type certificated two-way radio telephone having sufficient power to permit communication, under normal operating conditions, with at least one ground station used or to be used by the applicant on the regular or alternate route, and capable of communication with other aircraft of the applicant in flight. In addition, each aircraft shall be provided with at least one type certificated radio receiving system capable of receiving radio range signals and weather broadcasts. Such receiving system shall include a type certificated audio filter system with suitable switching arrangements to be used in connection with the reception of simultaneous radio range and voice broadcasts: *Provided*, That such audio filter system will not be required if the airway or route traversed is not equipped with simultaneous type radio range stations."

3. By amending section 40.253 to read as follows:

"*40.253 Radio equipment.* Same as in section 40.235 and, in addition, applicant shall show that there is installed in each aircraft to be used in instrument or over-the-top operation (during day or night) over the proposed route, or part thereof, one additional separate type certificated radio receiving system capable of receiving radio range signals and weather broadcasts. Such receiver system shall normally operate from the main source of electrical supply of the aircraft but, in event of failure of the normal power source, shall be capable of being switched to operate from an independent power source. This system shall include an independent power source capable of operating such receiver continuously for a period of at least 4 hours. It is also required that such receiver operate from an independent antenna or from either of two antennas. Two sets of type certificated headphones and two type certificated microphones shall be carried in the aircraft at all times."

4. By striking the words "an approved" in sections 40.2530 and 40.2531 and inserting in lieu thereof the words "a type certificated".

5. By amending section 40.2532 to read as follows:

"*40.2532 Marker beacon receiver.* Applicant shall show that there is installed in each aircraft a type certificated ultra-high frequency receiving system operating on the frequency of 75 megacycles. The system shall provide means for the visual and aural indications of signals transmitted by ultra-high frequency positive-cone-of-silence and fan type marker stations. The design of the system shall preclude, insofar as possible, erroneous patterns of the transmitted signal caused by the receiving system. Such receiving system will not be required if the airway or route traversed is not equipped with ultra-high frequency positive-cone-of-silence or fan type marker stations."

6. By striking section 04.503.

7. By amending sections 04.530 (e) to read as follows:

"(e) Type certificated radio equipment as specified in Part 40."

8. By amending section 04.532 (h) as follows:

"(h) Type certificated radio equipment as specified in Part 40."

[1] Application for type certification of aircraft radio equipment should be made as prescribed in Part 02. The provisions of sections 02.2 and 02.3 providing for a production certificate and the rules for the operation under such certificate shall not be applicable to the case of type certification of aircraft radio equipment.

Status of Parts of the Civil Air Regulations and Amendments

As of January 1, 1941

All persons affected by the Civil Air Regulations, including those preparing for examination for certificates, may obtain the parts required from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C., without charge.

Only Parts Actually Needed Should Be Requested

For example, *pilots* are governed in general by parts 01, 20, and 60; *aircraft mechanics* by parts 01, 04, 15, 18, 24, and section 60.32; and *aircraft engine mechanics* by parts 01, 04, 13, 14, 18, and 24.

How To Order Parts

Those persons not affected by the C. A. R., but desiring all or any part of the Regulations for other purposes, may obtain them in the manner herein described. Those parts on which a price is listed in the tabulation below are on sale by the Superintendent of Documents, United States Government Printing Office, Washington, D. C., and are not available for free general distribution.

Eventually, all parts will be placed on sale; meanwhile, parts not yet on sale (carrying remark, in tabulation below, "order from C. A. A. only") may be obtained without charge from the C. A. A., upon demonstration of valid interest on the applicant's part.

Bound volumes of the complete Civil Air Regulations are no longer available.

Important: Amendments

All amendments to the Civil Air Regulations are printed in the Official Actions section of the Civil Aeronautics Journal, as released. (Occasional amendments, too long to print in full, are abstracted to describe fully the nature and purpose of the amendment's provisions so that the individual may determine whether he need order the full text.)

The tabulation below carries in the right-hand column the numbers of all effective amendments to each part issued subsequent to the date of that part. When ordering parts from the C. A. A., all effective amendments are automatically included. But, after ordering parts from the Superintendent of Documents, the amendments received should be checked against this tabulation and those not received ordered from the C. A. A.

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NOTE.—Part numbers not included in the list below are unassigned.

Part No.	Title	Date	Remarks	Price	Effective amendments
	AIRCRAFT				
00.	CANCELLED		Now incorporated in Part 01		
01.	AIRCRAFT REGISTRATION AND AIRWORTHINESS CERTIFICATES.	July 15, 1940	In stock at C. A. A. and on sale at G. P. O	$0.05	Administrative amendment No. 1, 68, 75.
02.	TYPE AND PRODUCTION CERTIFICATES.	do	do	.05	75.
03.	CANCELLED		Now incorporated in Part 01		
04.	AIRPLANE AIRWORTHINESS [1]	May 31, 1938	Out of stock; reprint, including amendments, to be available soon from C. A. A.		60 (a), 5, 14, 26, 28, 48, 53, 69, 75, 85.
13.	AIRCRAFT ENGINE AIRWORTHINESS [2]	Nov. 15, 1940	In stock; order from C. A. A. only		
14.	AIRCRAFT PROPELLER AIRWORTHINESS.[3]	do	do		
15.	AIRCRAFT EQUIPMENT AIRWORTHINESS.[3]	do	do		
16.	AIRCRAFT RADIO EQUIPMENT AIRWORTHINESS	Effective Feb. 13, 1941	do		
18.	REPAIR AND ALTERATION OF AIRCRAFT.[3]	do	Out of stock		
	AIRMEN				
20.	PILOT CERTIFICATES	May 1, 1940	In stock at C. A. A. and on sale at G. P. O	$0.05	54, 63, 65, 67, 75, 82, 83, 87.
21.	AIRLINE TRANSPORT PILOT RATING	Nov. 15, 1940	In stock; order from C. A. A. only		87.
23.	CANCELLED		Now incorporated in Part 51		
24.	MECHANIC CERTIFICATES	May 1, 1940	Out of stock at C. A. A., but on sale at G. P. O	.05	44, 61, 73, 75, 87.
25.	CANCELLED		Now incorporated in Part 24		
26.	AIR-TRAFFIC CONTROL-TOWER OPERATOR CERTIFICATES.	Oct. 4, 1940	In stock at C. A. A. and on sale at G. P. O	.05	87.
27.	AIRCRAFT DISPATCHER CERTIFICATES.	July 15, 1940	do	.05	74, 75, 87.
	AIR CARRIERS				
40.	AIR CARRIER OPERATING CERTIFICATION (INTERSTATE).	May 31, 1938	In stock at C. A. A. and on sale at G. P. O.	$0.05	85.
	AIR AGENCIES				
50.	FLYING SCHOOL RATING [3]	Nov. 1, 1940	In stock at C. A. A. and on sale at G. P. O	$0.05	87.
51.	GROUND INSTRUCTOR RATING	May 1, 1940	Out of stock at C. A. A., but on sale at G. P. O	.05	75, 87.
52.	REPAIR STATION RATING [4]	do	do	.05	75, 84, 87.
53.	MECHANIC SCHOOL RATING [3]	Sept. 15, 1940	In stock at C. A. A. and on sale at G. P. O	.05	75, 87.
	AIR NAVIGATION				
60.	AIR TRAFFIC RULES [4]	Oct. 4, 1940	In stock at C. A. A. and on sale at G. P. O	$0.10	'76, 77, 80, 86.
61.	SCHEDULED AIR CARRIER RULES (INTERSTATE).	May 31, 1938	Out of stock; to be available soon at C. A. A. and on sale at G. P. O.		601–A–1, 51, 52, 75.
	MISCELLANEOUS [5]				
98.	DEFINITIONS	Nov. 15, 1940	In stock; order from C. A. A. only		
99.	MODE OF CITATION OF REGULATIONS	do	do		

[1] Manual out of stock.
[2] Manual not yet issued.
[3] Manual for this part available; order from C. A. A. only.
[4] Part 2 of Manual, Airport Traffic Control, and Part 3, Airway Traffic Control, available; order from C. A. A. only.
[5] Parts 90.–96., inclusive, have been cancelled.

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